ARCHIVES OF OPHTHALMOLOGY.

CONGENITAL CYST OF THE EYEBALL; MICROSCOPIC EXAMINATION.

By Dr. ARNOLD KNAPP.

(*With five figures on Text-plate V.*)

F. F., aged two and one-half years, parentage healthy, except for the condition of the eye, seems to be perfectly normal. At birth it was noted that the right eyeball was larger than the left, and that the lower lid seemed unusually prominent. This deformity has increased. The eye was enucleated on June 14, 1900, and preserved in formal.

Macroscopic examination: The eyeball has a more or less spherical form, measuring laterally 25 *mm*, antero-posteriorly 25 *mm*, vertically 26 *mm*.

Projecting down in the area anterior to the equator is a round circumscribed protuberance continuous with the fibrous covering of the rest of the eyeball, measuring 18 *mm* laterally, 14 *mm* antero-posteriorly, and 10 *mm* vertically. This protuberance (Figs. 1 and 2) is nodular and constricted at its base, with a round swelling at one point on the anterior surface. The wall appears to be scleral tissue, and is quite thin.

The cornea is small and flattened, horizontally oval, measuring 10 x 12 *mm*. An oblique line (Fig. 1) divides it into a transparent part where normal iris is visible, and an opaque part, which appears to cover a coloboma of the iris. At the limbus corresponding to the coloboma there is a superimposed hard nodule measuring 6 x 8 *mm*, which is covered by conjunctiva. The divided optic nerve is normal.

The eye was bisected sagittally, passing through the protrusion (Figs. 3 and 4). A thin yellowish fluid escaped. On looking at the opened eye, we find the lower half deficient in pigment. The separating line is marked by a sharp ledge, which projects directly inward from the sclera to a distance varying between 1

and 5 *mm*, being greatest anteriorly and posteriorly. This shelf-like projection is situated just below the optic disc posteriorly, and anteriorly just back of the ciliary body. The lower and unpigmented portion of the interior of the eyeball is ectatic in an area below the ciliary body, and inferiorly corresponding to the protrusion on the external surface of the globe. The ectasia is narrowed at its base by a projecting, rounded ridge, and is divided by projecting septa into separate depressions. The wall is scleral and transparent. A thin fibre-like structure passes across this ectasia.

In the upper half of the eyeball, the sclera is of normal thickness. There is a pigmented coat, which is continuous on the upper surface of the projecting ledge, and ceases abruptly at its sharp edge. Anteriorly and externally the pigment is wanting in a triangular area (Fig. 4) where the ciliary body and iris are absent. A thickened mass of white tissue occupies this defect, and corresponds externally with the hard episcleral nodule. The ciliary body appears as a smooth pigmented body. In place of the lens there is a whitish band, including lens substance attached to the posterior surface of cornea by a round process, which is continuous with a membrane lining the posterior corneal surface. This band posteriorly is covered by a whitish membrane, which also covers the choroid, and is presumably of retinal origin. The retina is a membranous structure greatly varying in thickness and transparency, which lines the entire eye. Posteriorly about the optic-nerve entrance it is thickest, and raised in ridges. Inferiorly, it proceeds, covering both surfaces of the ledge to continue as a lining for the choroidal coloboma and ectasia. Anteriorly, it is connected with the mass of the ciliary coloboma and the lens tissue. From the thickened retina near the optic opening a thin fibrous strand passes directly forward and outward through the vitreous chamber to the area in the ciliary coloboma (Fig. 4), where it is inserted in a fan-shaped manner. Other, but thinner, strands pass from the apex of the ledge to the surrounding tissues.

Microscopical: The sclera is normal, except for its thinness in the ectatic portion.

The choroid can be traced from the disc down to the base of the ledge, where it comes to a gradual termination; it is not continued in the ledge. Above the disc, in the upper pigmented half of the eye, the choroid is everywhere present and is normal but

FIG. 1.

FIG. 2.

FIG. 5.

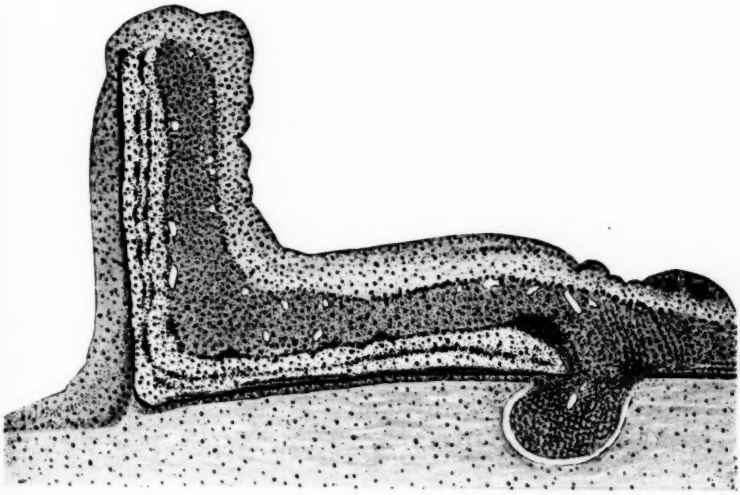


FIG 3.

FIG. 4.

TO ILLUSTRATE DR. ARNOLD KNAPP'S CASE OF CONGENITAL CYST OF THE EYEBALL.

for scantiness of blood-vessels. Anteriorly, it is continued in the ciliary body, which can be recognized as such, but is rudimentary, presenting but two or three small ciliary processes. The iris and iris angle seem normal. In the lower and anterior part of the eye, between the anterior margin of the ledge and the cornea, there are a number of peculiar changes. At the root of the ledge there are two structures, a fibrous and a muscular part, which represent the ciliary body ; they are continued into the centre of the ledge, the muscular part ceasing abruptly against the scleral tissue, while anteriorly it extends only a short distance, and gradually terminates. The fibrous part is intimately connected with the formation of the ledge, passes forward along the region of the ciliary body, becomes thickened and uneven, and can be traced in the posterior layers of the cornea. There are no ciliary processes; this membrane is lined by a very loose-meshed connective-tissue structure, which forms a projection to serve as a rudimentary iris, and is prolonged around the iris angle to the posterior corneal surface.

The pigment epithelium below the disc extends to the ledge, and is prolonged almost to the extreme inner margin, where it stops short, and is not continued in any manner. In the upper half of the eye the pigment epithelium is present and is normal. In the part anterior to the coloboma the pigment epithelium is again present, lining the loose tissue along the ciliary body to the root of the ledge, in which it can be followed to the margin.

The optic-nerve entrance is distorted so that the nerve fibres are considerably bent before reaching the retina proper. The nerve is normal. The retina about the disc is very much thickened. This is due to a proliferation and thickening of the nerve-fibre layer and a layer of fibrillary connective tissue, which replaces the limitans interna. The former contains many vacuoles with homogeneous, deeply-stained bodies (fig. 5). Below the disc some of the retinal layers can be identified, and, together with the thickened nerve-fibre and the limiting connective-tissue layers, they are situated on the upper surface of the ledge ; they cease at the margin, except the last mentioned layer, which continues as a thin membrane to line the entire coloboma and ectatic portion. It is composed of parallel-running fibrillary connective-tissue with round and elongated nuclei. The lumina of several middle-sized vessels are visible in about the centre and externally. The inner margin shows no especial limiting membrane or layer of cells.

The junction with the sclera externally is direct. The retina in the upper or pigmented half of the eyeball is fairly normal; the limiting connective-tissue membrane is very much diminished. At the ora serrata it appears again as a homogeneous connective-tissue structure, which skirts along the ciliary body and iris to the posterior surface of the lens. On the other side, as it approaches the ledge of the coloboma, it is joined by a few of the retinal elements. On the lower surface of the anterior ledge, after passing the free border, this membrane is thickened, but diminishes again as it lines the coloboma.

The lens appears as a round body composed of a convoluted capsular structure and amorphous matter, surrounded by a dense connective-tissue membrane previously described as derived from the limiting connective-tissue layer which lines the retina. Anteriorly it passes to the posterior surface of the cornea, and spreads out in the deeper layers.

The cornea in its outer and deeper layer shows a nucleated band of connective tissue continuous with the choroid just described.

The main peculiarities of this eye are as follows:

A defect exists in the lower membranes of the eye usually described as a coloboma of the choroid with an ectatic portion, where no pigment epithelium or choroid is visible to the naked eye. The wall of the coloboma is composed of sclera and a membrane which lines the entire eyeball. The sharp projecting ledge circumscribing the coloboma is formed exclusively by a thick line of pigment, bounded on its upper surface by retinal elements and a thickened limiting connective-tissue membrane; on the lower surface by the latter alone. The pigment epithelium is not continued on in the lining of the coloboma in any form. The lining membrane of the coloboma is principally derived from the connective-tissue layer which directly adjoins the sclera. The retina is not represented in the wall of the coloboma unless this connective-tissue membrane be regarded as a thickened limitans interna. The choroid ceases abruptly at the base of the ledge.

The interior of the entire eye is lined by a white structure composed of the retina and this connective-tissue membrane. The lens is surrounded by it and anteriorly it borders the

posterior surface of the cornea. Below the optic nerve, arising from the thickened lining membrane, but above the ledge marking the limit of the coloboma, and with no connection with the sclera, a white strand of similar structure passes directly across the eye and finds insertion in a triangular defect in the ciliary body. This strand has been frequently described in deformed eyeballs and Hess has especially drawn attention to its importance, and has found that this structure conveys vessels, which are branches of the hyaloid artery, forming a communication between the exterior and interior of the eye.

The triangular defect in the ciliary body is situated on the outer side and is above the coloboma. Here the pigmented ciliary body is replaced by a thickened yellowish tissue to which this strand becomes attached. The ciliary processes, iris, and lens are rudimentary; the deep opacity of the cornea is due to the presence of vascular connective tissue in the deeper layers; "Drusen" are present on Descemet's membrane. A dermoidlike tumor is situated on the outer external surface.

In some colobomas the retinal pigment epithelium has been found present, but without pigment. In others, the other retinal elements have been noted in varying degrees of definition. The rosette formations described by Flexner and Wintersteiner in glioma of the retina, which have been described in rudimentary eyes, are not present.

So-called colobomas of the choroid with and without moderate ectasia are not rare; a number of microphthalmic eyes with connecting orbital cysts have been described. Our case, an enlarged eye with coloboma and marked ectasia, occupies an intermediate form in this variety of congenital malformations. These colobomatous formations were formerly brought into relation with the fœtal cleft, and were believed to result from an imperfect or retarded closure on account of persistence of the mesodermal structures passing through the cleft into the interior of the eye. Of recent years further anatomical examination of the deformities have caused objections to be raised against this view and new theories have been advanced in explanation so that

von Hippel says the solution of their origin is to-day far from found.[1]

In our specimen, remnants of mesodermal structure line and traverse the entire eyeball. Both layers of the secondary optic vesicle are defective in the region of the coloboma, and as this is situated in the region of the optic cleft, in our case at least, the deformity can be explained by the non-closure of this cleft. The defect in the choroid is regarded as a non-differentiation of the surrounding cephalic plates. There are no evidences of an inflammatory process. The defect in the ciliary body is situated externally and above the choroidal coloboma. It is occupied by a thickened mass of yellowish tissue which has been seen in other eyes (v. Hippel, *l. c.*) and is regarded as a remnant of mesodermal tissue.

Description of Figures on Text-plate V.

Figs. 1 and 2.—Anterior and lateral views of eyeball.

Figs. 3 and 4.—The bisected eyeball showing upper pigmented and lower non-pigmented portions separated by a prominent ledge, and the white strand as it passes across the vitreous chamber to be inserted at the site of the coloboma of the ciliary body.

Fig. 5.—Microscopic components of the ledge. It will be seen that the retinal elements do not continue in the coloboma, and that a thickened connective-tissue membrane replacing the limitans interna forms the lining for the coloboma.

[1] *Graefe-Saemisch*, second edition.

A CASE OF HARD CHANCRE OF THE UPPER LID.

By Dr. FRITZ WEBER, Zurich.

Translated from *Arch. f. Augenheilk.*, XLIV., by Dr. Ward A. Holden.

THE great interest which extra-genital chancre excites leads me to report the following case which I observed while assistant in the Berne clinic and recently have had the opportunity of examining again:

June 3, 1898, a boy of three was seen at the Berne eye clinic and a provisional diagnosis was made of hard chancre of the left upper lid.

The history obtained from the mother was as follows: The father and mother are healthy and have three healthy children. Four years ago the mother aborted at the seventh month, as she thinks from fright. A year later she gave birth to twins, one of which is the patient. The twins have always been healthy.

The patient now and then had inflamed margins of the lids and at present there is blepharitis sicca of the right, otherwise healthy, eye.

Six weeks ago the mother noticed on the inner third of the margin of the left upper lid, at the site of a cilium, a small red nodule on which was a small vesicle with clear contents. The nodule gradually increased in size, and the vesicle gave place to a small ulcer. Two weeks ago, or four weeks after the beginning of the affection, a physician was consulted, after applications of milk and water had been made, and he prescribed a white salve to be applied three times a day. The ulcer, however, rapidly grew larger and the lid looked as if it had been gnawed. Another salve ordered later was equally inefficacious, and the entire lid became red

and swollen. Later a second physician made a provisional diagnosis of chancre and sent the patient to the clinic.

The child had never complained of pain, there had never been any eruption, and there was no apparent enlargement of the glands; nor did the patient ever cough.

As regards the manner of infection, nothing definite could be obtained. An Italian laborer quartered in the house had an eruption on the face, neck, and arms, and he had often played with the child, of whom he was very fond.

St. pr.—Right eye, nothing particular except a low degree of blepharitis sicca.

Left eye.—The eyeball cannot be seen on account of the peculiarly deformed and swollen upper lid.

The condition of the lid is as follows: The inner two thirds of the lid margin are forced upward in a convex arc by an excoriated, mottled, reddish-yellow mass, so that the lid proper seems shortened. The skin of the lid is slightly injected. Cilia are present only in the outer portion of the lid. The affected tissue, which resembles genital mucosa, is 2 *cm* in lateral diameter and 1 *cm* in vertical. It is bounded above and to the sides by the displaced margin of the lid. The surface is smooth, there are no undermined margins, and no evidence of superficial vessels. On the inner surface of the lid the conjunctiva stops in a sharp line near the margin of the swollen mass. The lid is not sensitive to the touch.

The lower lid is free but there is considerable injection of the tarsal conjunctiva, while the bulbar conjunctiva exhibits no signs of irritation. Both lachrymal puncta are intact. The ball apparently is not affected.

The left pre-auricular gland is as large as a hazel-nut, indolently swollen. Beneath the jaw and in the neck other swollen glands are found on the left side. The glands on the right side are not enlarged.

The general examination is negative, and the child has a healthy appearance.

Diagnosis.—The entire picture is so typical that it could hardly be taken for anything but chancre, and this diagnosis was confirmed in the dermatological clinic.

Therapy and course.—On account of the great deformity of the lids and the fact that the affection had lasted six weeks, it did not seem advisable to await the appearance of secondary symptoms.

Inunction treatment was begun, therefore, and calomel applied locally three times a day.

June 5, 1898.—The secretion from the ulcer now forms crusts which can be removed without causing much hemorrhage.

June 9th.—The induration is much less.

June 13th.—The ulcer has decreased one half. The patient stands the treatment very well.

June 18th.—Scarcely anything is to be seen of the ulcer. Only where the lid margin was curved there remains a crust. The lid is resuming its normal form and the skin of the lid appears again like normal skin except for redness and swelling. The pre-auricular gland is smaller. No secondary symptoms have appeared.

June 23d.—Nothing is now to be seen except slight redness and swelling of the skin of the lid. At the site of the earlier curve in the lid there is a small defect in the lid margin through which the sclera may be seen when the lids are closed. Lashes are present only in the outer third of the lid margin.

June 30th, st. id.—One per cent. yellow ointment is now used locally in place of calomel.

July 12th.—The lid is more nearly normal, the lashes are more numerous. The pre-auricular gland is smaller. The inunctions are discontinued and syrup of the iodide of iron given.

July 29th.—Patient discharged, but the iodide of iron to be continued. The deformity is not great when the eyes are open, but the curve in the lid and the lack of lashes attract attention. The pre-auricular gland is still somewhat enlarged, but the cervical glands on the left side are no larger than those on the right.

Sept. 29th.—The patient returned for a plastic operation. In the interval he was in good health and no secondary symptoms have developed. The pre-auricular gland can still be felt. The ocular condition is unchanged. No lashes are present in the region of the defect.

Sept. 30th.—With a straight lance-shaped knife an intermarginal incision 1 *cm* long was made at the spot where the margin was curved and free from hair. Then from the upper margin of the left brow a rectangular piece 1 *cm* broad and $\frac{1}{2}$ *cm* high was excised in such a manner that its lower margin in its entire length carried one or two rows of hairs from the brow. This bit of skin was inserted into the intermarginal incision between the tarsus and the skin of the lid, so that the hairs of the eyebrow stood at

the level of the lid margin, and was held in place by a single suture passed through the lid.

Oct. 10*th.*—The transplanted flap has healed in well, filling the defect in the lid. Most of the hair has fallen out.

May, 1901.—The lid has its normal shape. The transplanted flap is a little whiter than the neighboring skin, and is well provided with hairs, which are less regularly arranged than the true lashes and are rather finer. They do not touch the cornea and hence the operation can be considered successful in its cosmetic results. The general condition of the child is good. The glands are no larger than they are frequently in non-syphilitic children, and there is nothing in the fundus to indicate the existence of syphilis.

REFLEX NYSTAGMUS.

By Dr. CARL BÄR,

ASSISTANT TO THE INNSBRUCK UNIVERSITY EYE CLINIC.

(*With one figure in the text.*)

Abridged Translation from *Arch. f. Augenheilk.*, XLV., 1, by Dr. Ward A. Holden.

SINCE the time of Diefenbach investigations and observations on nystagmus have increased greatly, as have also the theories in regard to this enigmatical twitching movement of the eyes, without the discovery of an explanation suitable for all cases. Nystagmus has long been observed with many lesions of the brain and cord, and also since Paul Schroetler's time in the coal miners of England and Germany.

I wish here to call attention to a variety of acquired nystagmus which, if carefully looked for, will prove not to be rare. I mean that form which is brought about reflexly from the conjunctiva or cornea in persons otherwise normal and having good vision. This type varies in different cases from slight nystagmic twitchings to a pronounced nystagmus, and is sometimes transient and sometimes of long duration. Six cases from the Innsbruck clinic have been selected for reporting, the first two being almost identical.

1. Josephine P., aged seventeen, came to the clinic with symptoms of a mild catarrh. The lids and lachrymal apparatus were normal. There was photophobia and some lachrymation. The tarsal conjunctiva was moderately reddened and swollen but the surface was smooth. Slight mucous secretion. Otherwise normal.

V = ⅞ in each eye, the same with + 0.75. Latent divergent strabismus of each eye. With the Graefe test the images stood in a vertical line with prism VII base in. Ophthalmoscopically normal.

The following interesting condition was found: When the lower lid was drawn away from the ball, or the upper lid was gently raised, a rapid horizontal binocular nystagmus became evident. The movements of the balls are apparently not interfered with, but movement takes place only after the apparent overcoming of some obstacle. When the patient looks down the nystagmus nearly disappears, while in convergence it is very perceptible. The patient complained of vertigo, and objects fluttered before her eyes, exhibiting a rapid horizontal movement. The patient stated also that all objects appeared large (macropsia). The pupils were contracted and rapidly dilated and contracted again. After using a silver solution on the conjunctiva the nystagmus continued for some time and then ceased gradually. As the conjunctival catarrh grew better, these symptoms gradually decreased. Later the nystagmus could be elicited when the lids were held apart after an application had been made to the conjunctiva. After the instillation of homatropine, the attacks came on when the patient tried to read or looked at a brightly illuminated surface. Cocaine lessened the symptoms. When a constant or alternating current was used the horizontal movements appeared, but a considerable current was necessary. The patient stated that these horizontal movements leading to vertigo came on frequently when she had read, drawn, or embroidered too long. She was then obliged to rest, and often it was not possible for her to do any further near work that day. The attacks sometimes could be checked by holding one eye closed. After the conjunctivitis was cured the nystagmus came on only when the conjunctiva was lightly touched with silver. Convex glasses were ordered for near work, and the nystagmus ceased. When dismissed she was requested to return at the first sign of recurrence, but so far she has not done so.

The following case is even more instructive.

2. Anna K., aged twenty-one, a seamstress, came to the clinic complaining that her eyes burned mornings and that she was often annoyed by a fluttering sensation. The patient sews and works at night under a strong electric light. For years she has noticed

that in the evening after excessive work a dull headache came on and then suddenly there was a slight trembling followed by rapid horizontal movements of objects looked at. After closing the eyes for a few moments the oscillation ceased, but came on again if she resumed work. During the attacks objects appeared alternately larger and smaller.

Objectively the lids and lachrymal apparatus were normal. Some photophobia and lachrymation. Tarsal conjunctiva moderately swollen and red, with a smooth surface and slight mucous secretion. The eye was otherwise normal. R V = $\frac{6}{6}$, with + 1. $\frac{6}{5}$. L V = $\frac{6}{6}$, with + 1.25 $\frac{6}{5}$. Exophoria 5°. Total hyperopia R, 2 D; L, 3 D. Movements of the ball free and unrestricted in all directions. On retracting either the upper or lower lid without using any force a marked horizontal oscillatory nystagmus was manifest, and the patient at once noticed an apparent movement of external objects. The movements of the eyeball were still free yet slow and made with greater effort. When she looked up, the movements nearly ceased and were most marked in convergence. Touching the conjunctiva with 1 per cent. silver solution, or by using an electric current on the skin of the lids, the nystagmus appeared spontaneously. Strong illumination of the eye with lens or mirror also produced the nystagmus. At the same time the pupil first contracted then quickly dilated, and this hippus continued while the nystagmus lasted.

The patient also said that objects appeared alternately larger and smaller. When astringents were dropped into the eyes and the lids held apart the movements became more pronounced.

The treatment of the conjunctival catarrh was not successful in spite of many remedies being used and the refraction corrected, until she gave up her work and went to the country for three weeks. Shortly after her return to work the burning of the eyes began again, and after fruitless efforts to cure the dry catarrh of the conjunctiva a weaker convex glass (+ 1.25) was given for work, the glass given previously having been discarded because it seemed to cause headache. With this glass the nystagmus disappeared except in the evening, and with another period of rest it disappeared entirely, and the conjunctivitis was controlled with a 1 per cent. boric-acid salve.

A third case, but a less characteristic one, was as follows:

3. Anna O., aged twenty-one, a cook, got a cinder in her right

eye on a train. Severe pain, photophobia, and lachrymation. *St. pr.*: The upper lid swollen and œdematous, lachrymal apparatus normal. Tarsal conjunctiva moderately red, no perceptible swelling. When the eye was moved quickly and extensively a vertical twitching of both eyes was observed, which ceased when the position of rest was resumed. A small cinder was found beneath the upper lid, and the upper half of the cornea presented linear erosions. The patient stated that when she attempted to open the eyes everything appeared to dance up and down. The nystagmic movements came on with every rapid movement of the eye—that is, when the cinder scratched the cornea. Removal of the foreign body caused the nystagmus to cease. This patient also had a latent divergent strabismus. Unfortunately she could not be kept long under observation.

4. A case similar to Cases 1 and 2 was observed in a decorative painter of twenty-seven who complained of the apparent movement of objects when the eyes were strained at near work. Here also there was latent divergent strabismus of 8°. R, with + 1 V $= \frac{6}{6}$; L, with − 7 V $= \frac{6}{18}$; Jaeger No. 3 read with difficulty from 9–5 *cm.* There was catarrhal conjunctivitis, and when one irritated the lids a marked horizontal nystagmus appeared. Retraction of the lids also caused nystagmus after a time.

5. J. F., aged nineteen, a gardener. The day before, a branch of a tree brushed his left eye. Some pain, photophobia, and excessive lachrymation. The tarsal and bulbar conjunctiva was red and swollen. Slight ciliary injection. The cornea was eroded in almost the entire extent of the palpebral fissure. The patient kept the eye closed. On opening the lids or on retracting the lower lid gently, a rapid horizontal nystagmus appeared. The patient complained of a fluttering before the eyes and of an apparent movement of objects. The nystagmus ceased when the cornea was turned up under the upper lid. The patient stated that the same sort of movement came on when he kneeled down at his work and strained the eyes. R, with + 0.75 $\frac{6}{6}$; L, with + 0.75 $\frac{6}{6}$?. Strabismus convergens of 5–6 *mm* linear deviation. Ophthalmoscopic conditions normal. Total hyperopia 2 D. A protecting bandage was applied, and in two days the erosion of the cornea had disappeared and with it the nystagmus.

6. C. S., aged eighteen, a medical student, noticed a fluttering before his eyes when he studied long by lamp-light, and finally the letters began to move back and forth horizontally.

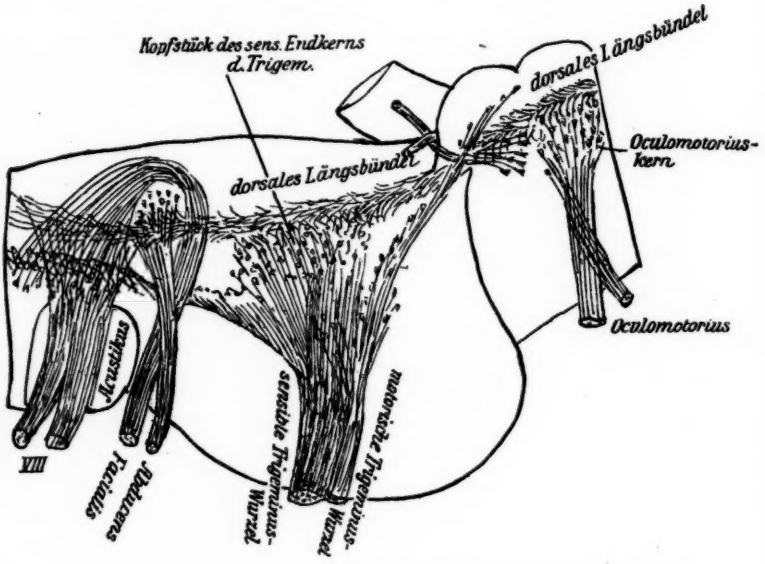
There would then be burning of the eyes and lachrymation. On examination he was found to have a dry catarrh. When the lower lid was retracted gently, a rapid horizontal nystagmus was seen in both eyes. R, with $-2.V = \frac{6}{6}$; L, with $+1.\frac{6}{6}$. Latent divergent strabismus 6°. On touching the conjunctiva the nystagmus would begin. In a week the catarrh was cured and the nystagmus could not be evoked. Later the same symptoms appeared after he had stood in the smoke of a railway station. The phenomenon was most marked in looking at pictures in museums and then reading his catalogue. It sometimes was necessary to close the eyes for fifteen minutes before objects ceased to flutter. He came under treatment again, and the symptoms passed off after a few days.

In reviewing these cases described, we find in common clonic spasm of some of the muscles supplied by the oculomotor nerve, brought about by peripheric excitation of the fifth-nerve branches to the cornea or conjunctiva. When the cause is removed, as in Case 3, the spasm ceases. These twitchings took place not only in the extrinsic muscles, and generally in those producing lateral movements, but also in the sphincter pupillæ, the latter causing the varying width of the pupil and the alternating macropsia and micropsia.

We have to do here with a movement independent of the will, called forth by excitation of a sensory nerve—a reflex process. The fifth, the sensory nerve of the conjunctiva and cornea, was in Case 3 directly irritated by a foreign body, and probably the recurrence in Case 6 was caused by small particles of carbon. In the other cases, the conjunctiva being in a state of irritation from the dry catarrh, the retraction of the lid, allowing the entrance of air, was sufficient to bring about the movement. In Case 5 the exposure of the eroded cornea to the air was the exciting factor.

The experiments in irritating the conjunctiva in other ways, such as by applying zinc, touching it, or using the electric current, and also the fact that when the affection of the conjunctiva or cornea was cured the nystagmus ceased, are positive proofs that this movement is doubtless a reflex process. What now is the nerve pathway in which this takes place? The excitation proceeds from the peripheric terminations of the fifth nerve in the conjunctiva or cornea, through

the first branch of the Gasserian ganglion, thence through the sensory spinal root to the spinal end-nucleus of the root of the fifth, and particularly to the chief portion of this, which lies in the pons (see figure).



THE REGION OF THE PONS AND CORPORA QUADRIGEMINA, AFTER EDINGER AND BERNHEIMER.

Here the ganglion cells come in contact with numerous collaterals of the dorsal longitudinal bundle, whose terminal arborizations surround the cells, and thus come in contact with the dendrites of the ganglion cells (Kölliker, van Gehuchten, Bernheimer). The dorsal longitudinal bundle, however, in the region of the corpora quadrigemina, comes in contact by means of similar dendrites with the ganglion cells of the oculomotor nucleus (Golgi, Obersteiner, Perlia, Bernheimer). The reflex arc is now complete. The excitation runs through the sensory root of the fifth, the dorsal longitudinal bundle, to the oculomotor (see figure). It is clear that the excitation does not affect a portion of the

oculomotor nucleus only, because of the rich contact relations between the individual nuclei and because of the fan-like expansion of the dorsal longitudinal bundle among these nuclei (Bernheimer).

But in order that a peripheral excitation shall produce nystagmus there must be an existing weakness of the musculature, otherwise every peripheral excitation would give rise to nystagmus, which is not the case.

In looking through the literature we meet with a similar case reported in 1883 by Magelsen. The patient was a seamstress who suffered from attacks of lateral oscillatory nystagmus which came on after continued work in the evening, accompanied by headache and vertigo. Covering the eye at once cut short the attack, but passing a light rapidly before the eyes at once brought it on again. Here, as in my Cases 1 and 2, the action of strong light was the exciting cause.

Since the first description of miner's nystagmus, which is a type of acquired nystagmus without visual disturbances, numerous explanations of the condition have been suggested. Moll and Brockmann have referred it to a toxic basis, a chronic poisoning from the impure air of the mines. Others, such as Taylor, Court, and Bell, believed that the deficient illumination alone brought on the affection. But neither of these explanations would hold good in our cases. Nor was there any ground in our cases to assume with Raehlmann that there was an underlying neuropathic condition. There remains then only a myopathic disturbance.

Moebius called attention to the fact that spasms occur in strained paretic muscles. Dransart and Charles Bell Taylor (1875) and Snell, the defender of the myopathic theory, claim that in miner's nystagmus the fatigued elevator muscles of the eye cannot constantly overcome their antagonists, and they place the nystagmus in the same category as writer's cramp. Horizontal oscillations would, therefore, depend upon a weakness of the interni. It was striking that in all our cases there was hyperopia, usually associated with divergent strabismus, manifest or latent.

In cases of long-continued near work, the hyperopic ciliary

and internal recti muscles are greatly strained, so that fatigue quickly comes on, particularly when the muscles are weak to begin with. The time comes when the interni as well as the ciliary muscle can no longer do their work, but the centre continuing to send impulses to the musculature, there follow contractions of the muscles alternating with relaxations. The process occurring in the intrinsic muscles gives us the hippus which Damsch found to be associated with nystagmus. Occurring in the interni, finally convergence becomes impossible, and the repeated contraction continuing, nystagmus is produced.

A CONTRIBUTION TO IRIDO-CYCLITIS, OR PHTHISIS BULBI, IN CASES OF SARCOMA OF THE CHOROID.

By Dr. K. JARNATOWSKI, Breslau, Germany.

(*With one figure on Plate XXIV. of Vol. XXXVIII., German Edition.*)

SINCE v. Graefe (*Graefe's Archiv*, xiv., 1868) first called attention to phthisis bulbi from sarcoma of the choroid and explained the condition as one of shrinking of the cornea, probably from paralysis of the corneal nerves, the subject has been treated by a number of authors, and particularly Fuchs (*Das Sarkom des Uvealtractus*, Vienna, 1882). More recently Leber and Krahnstöver, Ewetzky, and others, have discussed the subject. The former paper (*Graefe's Archiv*, xlv., 1 and 2) contains a critical résumé of the entire literature, and discusses the various possibilities in a detailed way, so that I need not now refer to the previous literature. Although the literature is extensive, the reports of cases are not numerous. Through the kindness of Prof. Uhthoff two eyes of this sort have been given me for examination.

The first of the two belongs to that class of cases in which the choroidal sarcoma leads to iridocyclitis, hypotony, and moderate diminution in the size of the ball without pronounced shrinking. Such cases have been recorded by Laurence, Nettleship, Hirschberg, Brailey, Vossius, Lawford, Treacher Collins, and others. In another class of cases there was complete shrinking of the ball, the tumor being found in a phthisical eye.

Case 1.—Mrs. W., aged 55, always myopic, went in August, 1895, to have glasses prescribed. A detachment of the upper-

outer quadrant of the retina was diagnosed in the right eye. In July, 1896, there were some opacities of the vitreous, and a broad detachment of the retina overhanging the disc. T — 1. V = fingers at 1 foot. In the left eye the field was normal and vision, with — 10, was $\frac{6}{60}$. Two weeks' trial of the pressure bandage and rest in bed brought about no improvement. The patient then went to another clinic, where similar treatment, with the addition of pilocarpine injections, was again of no avail. In November, 1896, there was severe pain in the head above the right eye, which passed off, and then, December 2d, returned with great violence. There was œdema of the lids, injection of the bulbar conjunctiva, and complete loss of sight. Leeches and cold applications caused temporary relief. The pain soon came on again, however, and the patient returned to the university clinic at Breslau. There was no history of injury.

St. pr. Feb. 7, 1898.—Slight œdema of the right upper lid, with some ptosis. Marked injection of the ball. Cornea lustreless, with many vessels and deep opacities. The anterior chamber is almost abolished. The iris is atrophic and retracted at its temporal side. Total posterior synechia. Complicated cataract. The ball is sensitive to pressure; no vision; T — 2; moderate diminution in the size of the ball.

Diagnosis: Detachment of the retina, irido-cyclitis.

Feb. 8th.—Enucleation was done in chloroform narcosis. The wound healed normally. No tumor could be discovered in the orbital cavity by palpation.

The patient now is well, and there has been no local return of the tumor.

Macroscopic examination of celloidin sections (Fig. 1).

Excepting for a slight shrinking, the form of the eyeball is scarcely altered. The sclera in the upper-outer quadrant of the posterior half of the ball is greatly thinned and bulging, but is elsewhere of normal thickness. The anterior chamber is abolished. The lens, which rests upon the cornea, shows marked cataractous changes. The ciliary body, processes, and iris are almost entirely replaced by new connective-tissue membranes. The choroid, where it is preserved, is thickened and partly detached from the sclera. The retina is wholly atrophic. In places it has disappeared, in others it is replaced by new membranes.

The entire interior of the eye, excepting the anterior portion, is filled with a tumor mass. The latter arises in the outer-upper

quadrant at the place where the sclera is thinned, having its origin in the outer layers of the choroid. In this region and in a curved line extending from the anterior portion of the tumor, there is considerable pigmentation (*d*, Pl. xxiv.). In the tumor are thrombosed vessels or cavities filled with blood (*f*), and also some areas of calcareous degeneration (*k*).

Microscopic appearances:

The tissues of the cornea are thickened with a dense cellular infiltration and numerous new-formed vessels in its deeper layers. The posterior lamellæ and Descemet's membrane are wrinkled. The endothelium is everywhere preserved. There are no evidences of corneal scars or ulcerations. The surrounding conjunctiva is greatly infiltrated, and contains many blood-vessels of large calibre. The anterior chamber is almost obliterated, and the nasal angle of the anterior chamber is blocked. The lens is cataractous. The iris is atrophic, shrunken, and retracted, and its pigment layer is broken up, the pigment being scattered through the atrophic tissues. On the anterior surface of the iris is a layer of new-formed connective tissue, and the posterior surface is united to the lens by a similar layer, due to an old cyclitis. The ciliary body and processes are atrophic and involved in this same membrane. The ciliary body is partly detached from the sclera. In general, the atrophy is more marked in the temporal parts than in the nasal, where inflammatory changes predominate. The choroid is infiltrated with leucocytes and red corpuscles, and in its inferior portion is split into two layers by an exudation, one layer adhering to the sclera, and one to the tumor.

The entire uveal tract presents the picture of chronic inflammation and sclerosis.

The retina has almost entirely disappeared, being visible only near the disc. The fibres of the optic nerve are atrophic.

The tumor in nearly its entire extent is necrotic, and does not take the nuclear stains. The structure is somewhat alveolar, and many vessels are present. The original portion of the tumor is covered with a pigmented layer, which extends into the inner layers of the sclera. The greater portion of the tumor, which has broken through this capsule, is unpigmented, except at its margin near the disc.

No micro-organisms were found either with alkaline methylene blue or with Weigert's bacterial stain.

This was a case of sarcoma of the choroid, followed by general plastic uveitis. Since no micro-organisms could be discovered in the eye, there seems no other explanation than that the necrosis of the tumor gave rise to the severe plastic inflammation with its consecutive degenerations. The growth of the tumor was apparently checked by this process, and no portions of the tumor exhibited evidences of proliferation.

Leber and Krahnstoever have discussed in detail the various factors leading to intraocular inflammation in cases of choroidal sarcoma. They believe necrosis of the tumor masses to be the chief factor, but, on the other hand, they consider the action of micro-organisms probable, though not yet proved.

Ewetzky considers the necrosis the principal cause since the metabolic products of necrosis are directly phlogistic.

For my part, it seems that until micro-organisms are found no other explanation can be held except that of necrosis.

It should not be forgotten, however, that in the opinion of most authors the sympathetic ophthalmia which, though rarely, follows intraocular tumor is due to the action of micro-organisms.

The cause of the necrosis in our case cannot be definitely placed. Leber believed disturbances of the vessels supplying the tumor to be the most frequent cause. Likewise, the complete functional destruction of the iris, ciliary body, and choroid may explain the diminished tension and the moderate lessening of the size of the ball.

CASE 2.—This case did not come under my personal observation and I am indebted to Professor Uhthoff for the following notes:

A. S., aged fifty-two, noticed a difference in the size of his pupils early in 1874. The eye was not red or painful. Cataract was present but operation was advised against on account of fundus changes. In August, 1874, the patient fell, striking the region of the right eye, which became suffused with blood. The mild inflammation following subsided quickly. From this time the eye gradually became smaller. In October and in December, 1877, the patient had two attacks of severe pain in the right eye, with injection. Both pain and injection each time disappeared in a few days.

St. pr., July, 1878.—The right eye of the otherwise healthy man is phthisical and sensitive to the touch but not reddened. No glandular enlargements or other growths that might suggest tumor metastases.

Optico-ciliary neurotomy was proposed by Professor Schoeler August 2, 1878. In the course of the operation it appeared that a large conical mass sprang from the posterior pole of the eye, having perforated the sclera. The ball was enucleated.

Microscopic examination showed that the tumor was a melano-sarcoma composed of round and spindle cells. There was also an intense plastic irido-cyclitis with shrinking of the new-formed inflammatory products and of the entire eyeball. The tumor occupied nearly the whole interior of the ball. The retina had undergone a connective-tissue degeneration and no layers were distinguishable. The choroid where it could be recognized was either infiltrated or degenerated. The sclera was thickened and shrunken. The lens was cataractous and the posterior capsule contained deposits of chalk.

In this case the question arises, What was the primary condition? Did a sarcoma develop in a phthisical ball or did the sarcoma lead to phthisis, and was the injury an ætiological factor in bringing about the phthisis? We may suppose that in all probability the sarcoma was present before the phthisis and that the latter was due to the former. The injury cannot be regarded as the cause of the sarcoma since this existed earlier. In proof of this is the dilatation of the pupil, noticed by the patient six months before the injury, and the blindness from complicated cataract. It is questionable also whether the injury was the cause of the phthisis since no scar of a perforating wound could be discovered. Most probably the tumor itself and its metabolic products are to be regarded as the cause of the irido-cyclitis leading to the phthisis.

No bacteriological examination was made. Nor can I offer any description of retrograde metamorphoses within the tumor. The cataract was a result of the pathological changes in the interior of the eye—the tumor developing for three years with the consecutive inflammation.

In conclusion I should like to present some statistics.

Although sarcoma of the uveal tract is of itself a rare affection, yet the cases which lead to phthisis are much rarer. In the Breslau clinic from 1861–1898, among 92,000 patients an absolute diagnosis of sarcoma was made only 23 times or 0.035 %. Among these 23 cases, probably only 5, or 0.005 %, and with absolute certainty only 2, were found to have led to phthisis bulbi. In one case panophthalmitis developed, in two others hypotony and inflammatory symptoms were noticed. In general, therefore, one may expect 1 choroidal sarcoma running a regular course in 2875 patients and 1 leading to irido-cyclitis and phthisis in 18,400.

It is my pleasant duty to thank Professor Uhthoff for permitting me to use the material for this paper and for his friendly interest in its preparation.

Explanation of the Figure on Plate XXIV.

a.—The tumor arising from the outer layers of the choroid.

b.—Inflammatory proliferation in the neighborhood of the tumor, partly entering the necrotic tissue of the tumor.

c.—Retina, having undergone connective-tissue degeneration, lying on the tumor.

d.—The point where the tumor broke through the inner layers of the choroid.

e.—Tumor mass in the vitreous chamber wholly necrotic.

f.—Thrombosed vessels.

g.—Old cyclitic membranes with complete atrophy of the ciliary body and iris.

h.—Cataractous lens resting on the posterior surface of the cornea.

i.—New-formed vessels in the cornea.

k.—Chalky deposits in the necrotic tumor

CONTRIBUTIONS TO THE ANATOMY OF THE MYOPIC EYE. EXTERNAL FORM, CILIARY MUSCLE, OPTIC-NERVE ENTRANCE, MACULAR DISEASE, SPONTANEOUSLY CURED DETACHMENT OF THE RETINA.

By Dr. L. HEINE,

FIRST ASSISTANT IN THE UNIVERSITY EYE CLINIC AT MARBURG.

(With Plate XVI. of Vol. XXXVIII., German Edition, and 3 figures in the text.)

Abridged Translation by Dr. Ward A. Holden.

THE literature of the pathological anatomy of myopia has not kept pace with the publication of clinical observations and theoretical considerations. Through the kindness of Prof. Birch-Hirschfeld, I obtained both eyes of one person, one eye being emmetropic, and the other myopic 15 D; and also both eyes in another case, each having myopia of 10 D, which I had examined ophthalmoscopically in life. Another eye with high myopia, enucleated for secondary glaucoma, and sent to me by Prof. Hess, exhibited changes which I interpreted as representing a cured detachment of the retina.

The first two eyes were removed after death from the body of a man of twenty-seven, and were fixed in 10% formal. The axis of the myopic eye measured 32 *mm*, the emmetropic 27 *mm*. In formal the former shrank to 31.5, and the latter to 26 *mm*. The vertical equatorial diameter of the myopic eye was 24.5 *mm*, of the emmetropic 24 *mm*; the horizontal diameter of the myopic 27.5, and of the emmetropic 26 *mm*. The freshly enucleated myopic eye

weighed 11.8 *g*, and the other 8.7 *g*. The volume of the former was 11 *cc*, and of the latter 8.5. Externally the myopic eye showed a staphyloma posticum.

The two eyeballs with myopia of about 10 D exhibited in life but slight ophthalmoscopic changes — a relatively small conus, spotted with pigment, without extensive atrophy of the choroid. Their sagittal axis was 28, horizontal 27, vertical 25, volume 10 *cc*, weight 9.5 *g*. No staphyloma posticum was visible. The axis length of the latter eye after formol hardening and celloidin imbedding was about 32 *mm*. All the eyes were left three days in 10% formal, and then hardened and dehydrated in alcohols of increasing strength. When they were in absolute alcohol a portion of the wall was excised, exposing the aqueous and vitreous chambers. In this manner detachment or displacement of the retina was prevented, which is of importance when the optic-nerve entrance is to be studied.

First, as regards the ciliary muscles in the various eyes: The comparison of the emmetropic and the highly myopic eye from the same person is particularly interesting. It has been fully proved that both eyes must accommodate equally, and we would expect the muscles of accommodation in each eye to be similar, and in fact the two eyes were very similar as regards the structure of the ciliary muscles and of the anterior segment in general. Since the retina of the highly myopic eye exhibits pathological changes at the macula, it is likely that the patient used the emmetropic eye only, both for distance and near. But since the ciliary muscle of each eye appears rather poorly developed, one might assume that before the myopia became excessive the myopic eye was used for near, and the emmetropic for distance.

In the case of bilateral myopia, the tendinous insertion of the muscle at Schlemm's canal is elongated by traction, so that the muscle proper begins farther back than in the normal eye. The root of the iris is also elongated backwards, causing a deepening of the anterior chamber. Finally, the belly of the ciliary muscle is elongated backward in the manner first described by Iwanoff. Iwanoff stated that the

muscle in the cases he examined was not atrophic — that is, not diminished in volume. The circular fibres had disappeared, but the radial fibres appeared hypertrophied. He, therefore, proposed the question whether the two parts of the muscle could not have different functions, the circular fibres producing positive accommodation, and the radial negative. But the latter idea seemed absurd to him, since the myopic eye cannot see in the distance.

In the eye with myopia 10 D I found not only a displacement of the belly of the muscle backward, as Iwanoff found, but only apparently a reduction in its volume.

Two further observations may be cited here to disprove the idea of a particular muscle for positive and for negative accommodation. Prof. Hess showed me a preparation of a myopic eye whose ciliary muscle in the opinion of Prof. Sattler, who has had a wide experience in this matter, was declared to be typically hyperopic. And Stilling mentioned a typical hyperopic form of the muscle in a myopic eye.

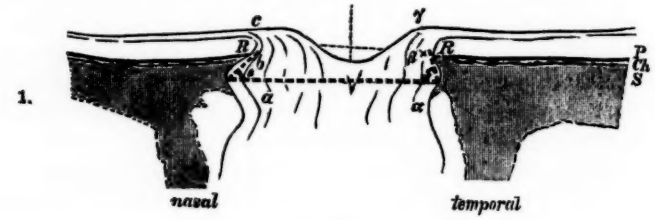
The second observation was on the eye of the pigeon. Here there are no circular fibres, as in man, but all the fibres appear to run in the direction of the radial fibres in man. But when the muscle is examined in a state of contraction, many of the fibres, and particularly those lying in the anterior third of the muscle, bend and assume an oblique or transverse direction. Many experiments on birds' eyes have given me no reason to believe in a negative accommodation, and the experiments of Hess and Heine show that the sympathetic takes no part in accommodation in dogs.

To recapitulate: (1) The ciliary muscle of myopic eyes may have the form generally supposed to be found only in the hyperopic; and (2) the pigeon's eye at rest exhibits only radial fibres, but in accommodation oblique and transverse fibres are found.

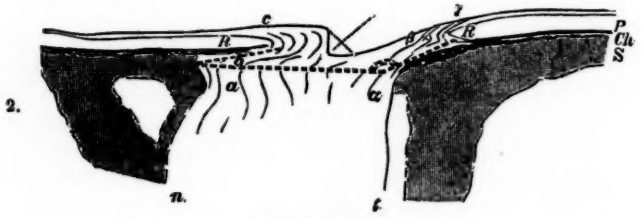
As regards the vitreous of the highly myopic eye, I found not so much detachments at the posterior pole as cavities in its substance. These were found only after the eye had been in absolute alcohol.

As to the optic-nerve entrance, according to Stilling, the ophthalmoscopic conus is in fact an optical, a perspective

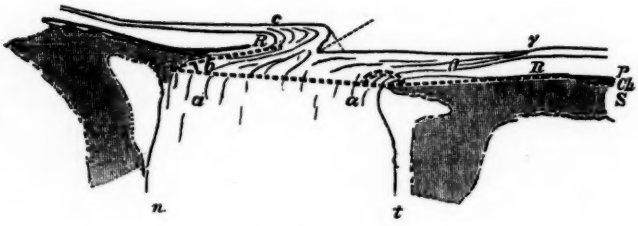
phenomenon. Fig. 1, Pl. xvi., represents the optic-nerve entrance in an emmetropic eye.



Emmetropia.



Myopia — 10 D.



Myopia — 15 D.

In the schematic figures of these drawings I have inserted Stilling's lines, not in order to show that Stilling's theory of the myopic conus is applicable in all cases, but only to show where these lines should lie. The horizontal dotted line represents the lamina cribrosa, and the lines running forward at its ends indicate the lateral walls of the optic canal anterior to the lamina cribrosa.

In the emmetropic eye the nerve fibres run almost directly

forward until they reach the lamina cribrosa (*a*, in figure), when they curved outward, and then inward, to enter the retina.

In the eye with myopia 10 D, the fibres of the nasal half of the nerve run almost straight to the lamina cribrosa and then turn sharply to the temporal side for some distance before turning again to enter the retina, the choroid and the retina being here displaced temporally over the sclera and lamina cribrosa.

These relations are more pronounced in the eye with myopia of 15 D. Here the choroid, and particularly the retina, are displaced still farther over the disc. The pigment epithelium, however, extends almost to the axis of the optic nerve. Therefore the nasal convex curve *a* to *b*, Fig. 3, is, as compared with that in Fig. 1, almost abolished, while the second concave curve *b* to *c* is almost an acute angle.

The axis of the vessel funnel in the emmetropic eye nearly corresponds to the axis of the nerve. In the eye with — 10 D, it is inclined 45° temporally to the latter, and in the eye with — 15, 60° temporally. The vessels are correspondingly bent.

At the temporal margin of the disc the displacements are more marked than at the nasal. The first anomalies are due to the fact that the lamina vitrea of the choroid is relatively too short, and does not reach to the optic foramen of the sclera. The convex curve of the optic-nerve fibres just behind the lamina cribrosa in the normal eye is here obliterated, and the fibres pass directly forward, and then turn at a right angle to enter the retina.

The choroid also has been drawn out of place, or atrophied, in the area between the scleral optic foramen and the ending of the lamina vitrea and pigment epithelium. Fig. 3, Pl. xvi., shows very clearly that this conus cannot, as Stilling supposed, be merely the temporal wall of the scleral optic canal seen obliquely.

The black and white spots of sclero-choroiditis posterior in myopia have recently been attributed to inflammation in the choroid. My preparations show, however, that the changes about the macula are not due to inflammatory

processes in the choroid, but principally depend upon alterations in the pigment epithelium of the retina.

It is interesting to compare with these changes the changes which I found in a case of spontaneously cured detachment of the retina in myopia. In the lower segment of an eye with high myopia, destroyed by secondary glaucoma, there were found numerous linear and bone-corpuscle-shaped pigmentations, such as one often sees with the ophthalmoscope after cured detachments. Microscopic examination showed at one point a gelatinous mass between pigment epithelium and retina which was supposedly the remainder of a transudation or exudation mostly absorbed, so that notwithstanding the fact that there was no clinical history to that effect, the diagnosis of previous detachment can hardly be disputed.

The non-involvement of the choroid in my cases of myopia seems to me a point of interest, though it is not justifiable to advance a theory from two observations.

One might suppose, however, that the adhesions and the immigration of pigment in the macula of highly myopic eyes were to be regarded as evidences of the process of healing of small detachments of the retina. It cannot be said that the development of myopic detachment is to be explained in the same manner as the development of macular affections in high myopia. The origin of the latter is not yet well understood, however, and furthermore only the healing processes could be well followed.

CASE OF CHESTNUT-BUR THORNS IN THE CORNEA; RECOVERY, PARTLY BY ABSORPTION, PARTLY BY REMOVAL OF THE THORNS.

By Dr. C. B. MEDING, New York.

Gertrude W., aged seven years. On October 21, 1901, while chestnutting in Fort Lee (N. J.) woods, was hit on the open left eye by a falling bur. I first saw her eight hours after the accident, when her condition was as follows: lateral illumination showed eight thorns transfixing the cornea, their points projecting into the aqueous chamber within a very short distance of iris and lens, so that any pressure on the cornea caused them to impinge on the iris; their bases, excepting one, broken off even with the surface of cornea. There was considerable congestion of the lids, some conjunctival injection, and no pain; fundus and reaction to light normal, vision not ascertained.

The first thought was to remove thorns, of which at least one seemed to offer sufficient surface for purchase; on trying, however, no instrument in my possession would take hold, and it was noticed, moreover, that the slight pressure made upon cornea brought the thorn points in contact with iris and lens. Atropin was instilled and expectant treatment advised, but other advice conflicting, the patient was shown to Dr. Herman Knapp. Again careful but unsuccessful efforts at removing the one protruding thorn were made. Dr. Knapp cited a single somewhat similar case he had seen, in which the cornea had been perforated by a thorn of hawthorn.

Dr. Knapp advised atropin, rest, and no surgical interference until specially indicated. Not without much trouble through contrary neighborly advice, this treatment was continued until November 21st, when the three more central thorns were removed

with a finely ground anatomical forceps. On December 20th two more were extracted, all these removals being possible through a loosening due to slight ulceration about the base of each thorn. By February 4th the remaining thorns had disappeared, the last to be absorbed being the one originally attacked. There were left three scar points, two so tiny and faint as to escape any but careful illumination, one somewhat larger and denser. $V = \frac{20}{20}$.

Beside its uniqueness the case presents four interesting and important points:

1st. The thorns were aseptic. One may rest easy as to the germicidal action of sunlight and the innocuousness of ordinary dew and dust.

2d. The curious tolerance of the cornea, and the generous absorptive powers of the aqueous, not generally believed to include vegetable matter.

3d. The wisdom of retaining thorns as plugs for the holes they made, thus preventing infection; a hint of wide application.

4th. The largest and most opaque scar was left at the site of our unwise meddling.

ON THE HISTORY OF THE THEORY OF SYMPATHETIC OPHTHALMIA.

By Dr. H. GIFFORD, Omaha.

THE recent investigations of Selenkowsky and Bellarminoff (*Arch. f. Augenhk.*, xliv., 1) on the production of sympathetic inflammation by the injections of toxins into the eye of the rabbit having called forth a protest from Rosenmeyer (*ibid.*, xliv., 3), claiming as his own the priority for the idea that sympathetic ophthalmia might be produced by toxins carried over from the first infected eye, Bellarminoff and Selenkowsky (*ibid.*, xlv., 1) point out that so far as the priority of the mere idea is concerned, it was first suggested by me (*ibid.*, xv., 1), but that the experimental basis for the theory was first produced by the work of Selenkowsky. Allow me to call attention to the fact that before the work of Selenkowsky or the suggestions of Rosenmeyer and myself, Alt (*Am. Journ. Ophth.*, i., 4, p. 98) gave the first experimental proof that a soluble organic poison (an infusion of the jequirity bean), when injected into a rabbit's eye, could travel by way of the optic nerves and their sheaths to the other eye, and there produce the initial symptoms of sympathetic ophthalmia. In those days there was not so much talk about toxins as at present, and Alt makes no mention of them in his article, but it is evident that there is no fundamental distinction between the poison from one of the higher vegetables and a bacterial toxin, so far as the purpose in view is concerned.

To Alt also belongs the credit of the first pathological evidence in favor of the transmission of sympathetic

ophthalmia through the optic nerves. In his article in these ARCHIVES (German Edition, vi., p. 310) he states that while pathological changes in the ciliary nerves were found in only 16⅔% of the eyes examined, the optic nerve and retina showed such changes in 79%. On this account he recommended, in enucleating for sympathetic ophthalmia, to remove as large a portion of the optic nerve as possible. At this time the weight of authority in favor of the ciliary-nerve theory was so great that Alt felt obliged to include the ciliary nerves as one of the possible avenues of inflammation to the second eye, but in his article we have for the first time a clear announcement of the idea, with anatomical evidence therefor that sympathetic ophthalmia may occur by a direct spread of the inflammation along the optic nerves. The germ theory of inflammation was not yet far enough developed to permit the inference, at present so obvious, that this inflammation must be caused by the action of germs or their toxins, and even in 1879, when Knies (*ibid.*, vol. ix., 1) gave additional anatomical evidence in favor of the direct spread of an inflammation from one uveal tract to another by way of the optic nerves, together with a very careful working out of the ramifications of the idea, he made no mention of the probability of the inflammation being due to microbes. With the generalization of the knowledge of bacterial action in the body, this inference was, however, inevitable, and was made almost simultaneously by Snellen, Leber, and Berlin in 1881.

At this time the idea of Berlin that the germs reached the second eye through the blood-vessels and developed there rather than in other parts of the body on account of the presence there of a more favorable medium for their growth, received little favor; and although the views of Snellen and Leber were practically the same, the fact that the argument of the latter was more elaborate and was quickly followed up by the experimental work of Deutschmann, has caused the germ theory of sympathetic ophthalmia to be widely known as the theory of Leber and Deutschmann.

The attempt of Schmidt-Rimpler to combine the theory of Berlin with the germ and ciliary-nerve theories, substitutes

for Berlin's assumption that the germs, after reaching the second eye by way of the blood-vessels, develop there, on account of the uveal tract affording a particularly favorable medium for their growth, the idea that they take root in the second eye on account of the congestion produced there by the vasomotor reflex from the injured eye. The idea, that although sympathetic ophthalmia was a germ disease its development could nevertheless be favored by sympathetic irritation, had, long before Schmidt-Rimpler, been advanced by me (*Trans. Internat. Med. Congress*, 1887, iii., p. 769), but if it is to be combined with the theory of transmission by the blood current, there must be some addition to it to account for the non-occurrence of sympathetic ophthalmia in the numberless cases of reflex irritation from external diseases of one eye through periods of months and years, during which occasional germs capable of producing inflammation must in all probability have entered the blood from the alimentary or respiratory tracts. If we assume, as did Berlin, the existence of a germ especially adapted for growing in the tissues of the eye, it is not necessary to call upon the influence of vasomotor irritation to explain sympathetic ophthalmia (although such influence may be admitted as a favoring factor), and this hypothesis of specificity cannot now be rejected so summarily as was done by Leber years ago, on the ground that bacteriology gave no support to the hypothesis of a germ whose action is limited to a particular organ. The eye offers a striking parallel in the case of trachoma. Clinical and pathological evidence makes it practically certain that trachoma is caused by the growth of some germ which gives no evidence of a tendency to invade any other tissues than the conjunctiva and possibly the lining of the lachrymal sac; and which, as with the cause of sympathetic ophthalmia, has hitherto eluded all efforts to discover it. In the case of sympathetic ophthalmia, however, it is not necessary to assume the existence of a germ specially adapted by nature for growth in the tissues of the eye before its entrance into the latter. The rarity of the disease, and the fact that it practically never has a chance to be propagated from case to case, both speak against such an

assumption; but it may be that various species of microbes, after growing within the eye for several days or weeks, may, by a process of natural selection, acquire a certain specific adaptation to the uveal tract, so that, on being carried to the second eye by the blood current, they find there conditions most favorable to their development.

In conclusion, permit me to suggest that the current practice of speaking of the theory that sympathetic ophthalmia spreads by continuity of lymph-spaces through the optic nerves and chiasma, as a return to the theory of Mackenzie, is incorrect. Mackenzie believed that the disease was due to a reflex from the retina of one eye through the optic nerves to the retina of the other, and heads his chapter on the subject: "Reflex or sympathetic ophthalmitis"; and on page 597 (American Edition, 1855), after admitting the possibility of the blood-vessels of one eye affecting those of the other, and of a transmission by the ciliary nerves, he states his position as follows: "I think, however, that the chief medium through which sympathetic ophthalmitis is excited is the union of the optic nerves. . . . It is extremely probable that the retina of the injured eye is in a state of inflammation, which is propagated along the corresponding optic nerve to the chiasma, and that thence *the irritation which gives rise to inflammation* [the italics are mine] is reflected to the retina of the opposite eye, along its optic nerve." It is thus evident that Mackenzie's conception is distinctly at variance with modern ideas not only of pathology but of physiology.

ABSTRACTS OF ARTICLES IN VOL. XXXVII. OF THE GERMAN EDITION, NOT PREVIOUSLY TRANSLATED.

By Dr. COLMAN W. CUTLER, New York.

I.—The Pathological Formation of New Vessels.

By Dr. **M. STRAUB,**

PROFESSOR OF OPHTHALMOLOGY, AMSTERDAM.

THE formation of new vessels in the cornea may be studied experimentally if an incision is infected with the mildly pathogenic spores of Aspergillus. Though it be acknowledged that the new vessels serve a useful purpose in bringing blood and lymph to strengthen the resistance of the cornea, especially as we now know the mysterious powers of the blood better than formerly, still the teleological explanation is not satisfying to the pathologist. It is not probable that the incentive to the development of new sprouts from the cells of the vessels comes from the nerves. In hyalitis caused by Aspergillus spores, the choroidal vessels grow through the pigment layer of the ora serrata into the vitreous exudate, which is devoid of nerves. The same is true of tumors. The attraction exerted by embryonal organs on vessels is striking.

It is easy to assume at the present time that a chemical substance is formed in non-vascular tissue, which exerts an influence on neighboring vessels. We know from Pfeffer of the chemotaxic motions of bacteria toward certain chemical bodies, and of the leucocytes toward areas of inflammation. In explanation of the formation of new vessels we may say, then, that what was proven for freely movable cells may be assumed for growing and multiplying fixed tissue cells. The attracting material may be a product of the bacteria in

the wounded cornea, or it may be produced by the tissue itself. Numerous instances indicate that the second method is the próbable one, and the hypothesis may be stated, in general, that various tissues primarily embryonal, in normal condition as well, have the property of developing substances which act on the vascular cells, so that normal, embryonal organs and new and pathologically changed tissue may be vascularized, the growth and development of the new vessels being in the direction of the greatest concentration of the attracting material.

Biological literature is rich in analogies. Miyoshi found that cane sugar, grape sugar, and dextrin were especially attractive to pollen tubes in Scilla patula. If it were possible to compare the growth of the pollen tubes with that of the corneal vessels, evidence in favor of the above mentioned hypothesis would be furnished.

Biologists differentiate between taxis and tropismus; the former being the movements of individuals or cells, and the latter, growth in a definite direction under external influences. It is permissible, then, to consider the growth of the tubes and the blood-vessels instances of chemotropismus.

The presence of vessels in the cornea in trachoma, where no ulcer or granules have preceded, indicates the presence of an excitant, the result of the conjunctival trachoma; also the parenchymatous keratitis following certain infections of the vitreous is not due to the presence of the organisms in the cornea, but probably, according to Barendrecht, to their products.

II.—Clinical Contributions to the Subject of Ocular Paralyses.[1]

(With Especial Consideration for the Lateral Muscles.)

By Dr. **MORIZ SACHS.**

The author resumes the study of the touch-test, a localizing test of which he has written previously.[2] In many cases

[1] From the clinic of Professor Fuchs, Vienna.

[2] "Zur Analyse des Tastversuchs," *Arch. f. Augenheilk.*, Bd. xxxiii., p. 111, und "Zur Symptomatologie der Augenmuskellähmungen," *v. Graefe's Arch.*, Bd. xliv., p. 320.

the information obtained by means of this test is of more value than that gained by an examination of the double images; for instance, a spasm of one rectus internus causes the same relation of the double images as the paralysis of the associated external rectus of the other eye. It is not usual to distinguish these conditions, but to charge all diplopia to a paralysis or paresis, as well as the extent of the distance between the double images. In these cases the touch-test shows that the lateral distance is dependent not only on the false (paralytic) localization of the paralyzed eye but also on the false (spastic) localization of the apparently healthy eye. The great advantage of this test over that with double images is that it enables us to detect errors of localization due to the muscular lesion, in each eye separately. In patients with one eye its usefulness is obvious, also in conjugate paralyses.

It is to be noted that in order to obtain accurate results, one must close or cover the eye, as Donders has suggested, before beginning the test; this is to prevent the patient from forming an idea in advance of the error he tends to make.

In the second portion of the paper the histories of fifteen cases are given with much detail.

1. *Paresis of Both External Recti.*

Franz K., aged thirty-six, Jan. 9, 1897. Present condition began eight weeks ago with severe headaches lasting three days, chiefly in the occiput and vertex. More violent by day than at night. After three days he noticed diplopia to the left. Vertigo and tendency to fall to the left. Symptoms less marked when the left eye was closed. Fourteen days later a second attack. Severe pains in all joints, headache and lumbar pain; fever. Diplopia in the whole field.

Syphilis and excess denied. Patient is married and has five healthy children; his wife has had no abortions.

The examination shows nothing abnormal except in the eyes.

Vision, accommodation, and fundus are normal.

Both eyes are in convergence. Movement of the right eye outward much limited; of left less so. Movements in other directions apparently normal.

Diplopia is homonymous; images on same level in entire field, with increasing lateral distance as the object is brought nearer. No noticeable increase of lateral distance of images in the lateral parts of field.

Touch-test with the right eye shows error in the entire field: the object is projected too far to the right. There is then in the field of the rectus externus a paresis, in the field of the rectus internus a spasm, of that muscle. The error is considerable; for an object held ¾ metre distant, it is 5 *cm.* In the inner position of the right eye, the error is somewhat more than in the outer position. For the left eye the result is the same except that the object is projected to the left.

Distance of the double images for an object held in the median line:

Distance of object from patient.	Distance of images.
50 *cm.*	16 *cm.*
1 *m.*	40 *cm.*
2 *m*	86 *cm.*
4 *m.*	170 *cm.*

The distance of the double images was determined with the aid of a second object; four images were seen. The second object was removed so far from the object fixated that the two inner images coincided, and only three were seen. Now the distance of the objects equalled that of the double images.

The disturbance in this case was peculiar. The field was divided into two equal, laterally displaced divisions, that of the right eye to the right, that of the left eye to the left.

It was possible to correct the diplopia by placing a prism of twenty-two degrees before either eye or by dividing the prism between both eyes. In the latter way the patient was able to work and was given prisms of eleven degrees before each eye, which he wore without difficulty. He was advised to submit to an operation if the condition remained unchanged.

It is to be noted that the lateral distance diminished more rapidly than would be accounted for by the approach of the object, and *vice versa* it increased more rapidly than the removal of the object accounts for.

2. *Paralysis of Rectus Internus, O. S.* (*Spasm of the Rectus Externus, O. D.*).

Heinrich L., age sixty-four. Vision poor since childhood. Three days ago, while at work, suddenly taken sick, vomited; vertigo, diplopia. No headache or other symptoms.

Arterio-sclerosis.

Eyes: macula corneæ, incipient cataract.

V O. D., $\frac{6}{6}$ + 8 sp. $\frac{6}{36}$; + 11, J. 3 at 16 *cm.*

O. S., $\frac{4}{6}$ + 8 sp. $\frac{6}{18}$.

Fundus normal. Slight ptosis of both eyes. The right eye deviates outward. Movement of this eye is not limited inward (to the left) and is normal; toward the right, however, there is marked nystagmus, which draws the eye outward and is followed by a slower motion in the opposite direction, by which the eye is brought inward, to be followed by the rapid outward jerk.

The left eye, because of a marked paresis of the rectus internus, can be brought but little beyond the median line. While in looking to the right the right eye shows the above mentioned nystagmus, the left eye is quiet. The movement of the left eye to the left is normal.

Diplopia: In the right half of the field crossed images, with marked increase of the lateral distance toward the right. In the left half, single vision.

Touch-test: With the left eye, in the region of the internus the error shows paralysis (the finger goes to the right). In the region of the externus there is no error.

With the right eye, in the region of the right externus, the error shows a spasm (the finger goes to the left of the object) and is considerable and increases on looking to the right. In the region of the right rectus internus there is no error.

Although the vision of the right eye was but little less than the left, it was enough to induce the left, paralyzed, eye to assume fixation. It is probable that the deviation of the right eye was secondary, but there may have been insufficiency of the internal recti previously. In four weeks all signs of paralysis and spasm disappeared under treatment with iodide of potash and Carlsbad salts.

3. *Spasm of Both Interni.*

Leopold S., aged nineteen. History of lead poisoning. At

first the left eye was said to deviate outward; a week later it was straight, then in a few days turned in.

Movements of both eyes normal; no nystagmus. Homonymous diplopia, with increasing lateral distance toward the left.

Touch-test: With the left eye, in the field of the rectus externus, paretic error of localization; the finger passes to the left of the object. The error increases as the object is brought toward the median line and is still larger in the right half of the field; therefore the error is no longer paretic but has become spastic.

With the right eye there is a distinct spastic error in the field of the rectus internus and a minimal paretic error in the field of the rectus externus.

The case is notable because the paretic error of localization in the field of the left externus is smaller as the object is moved to the left. This shows that the error cannot depend on a paresis of the left externus. The difficulty is cleared by the assumption that there is a spasm of the left internus which influences localization even in abduction. The history of the diplopia strengthens this view. The error in localization with the right eye shows the same condition, but less marked.

4. *Spasm of Left Rectus Internus* (following paresis of the right rectus externus).

Dr. W., aged thirty-two. Has seen double for two weeks; began with headache and vertigo. The description given by the physician of the early stage would indicate abducens paresis, with marked limitation of motion outward of the right eye; this disappeared, but diplopia remained. At present there is diplopia only on looking far to the right. The image of the left eye far to the left, that of the right eye a little to the right of the real object.

In accordance with this, the projection test showed with the left eye a marked spastic error in the field of the left internus on looking to the right. With the right eye, a slight paretic error in the field of the rectus externus.

No limitation of motion of the right eye outwards, but nystagmus of the left eye on looking to the right.

5. *Spasmus of the Left Internus.*

Not essentially different from the last case.

6. *Right Associated Spasm.*

Mrs. W., aged sixty. Fell and struck the forehead on an iron post, and from that time had headache. A week later became unconscious, and remained so during the night. The next morning violent headache; saw badly. Her physician diagnosticated right hemiplegia; this passed off, but vision remained impaired. There is no hemianopsia. Ophthalmoscopically, dense vitreous opacities. Vision: fingers at 1½ *m*. Pupils normal.

Both eyes turned to the right. Movements of eyes to both sides normal.

Touch-test: An object in the left half of the field is correctly localized, but in the right half, the error of projection indicates spastic localization.

7. *Left Associated Spasm.*

Rudolf F., aged forty-one. Attack began a week ago with vertigo and vomiting and violent headache; passing impairment of consciousness. Vision poorer during this time. Field of vision normal. No diplopia. Both eyes a little turned to the left. The right eye does not move outward well, and in that position there is nystagmus with a hurried movement outwards (to the right), and a slower return. The movement of the left eye to the right somewhat limited, and in this position nystagmus as in the right eye.

Touch-test: In the field of the muscles turning eyes to the right there is an error showing paresis, not marked, but constant. In the opposite muscles, right internus and left externus, the test shows a spasm, much more marked than the paresis of the opposite muscles. It is probable that the influence of the spasm inhibits the movement to the right, and causes the appearance of paresis.

Later, left hemianopsia; the head was turned to the right.

8. *Left Associated Paresis* (*Right Associated Spasm*).

A typical case of conjugate deviation following hemiplegia.

9. *Spasm and Paresis of Convergence* (*Paresis of Accommodation*).

Diphtheria; two weeks later diplopia and impaired vision. With + 4. D. sph. reads Jaeger 1 at 20–25 *cm*.

The eyes are in moderate convergence; movements in all directions apparently normal, but extreme convergence is limited. Homonymous diplopia to 40 *cm*, where the images are united until

at 18 *cm* there is crossed diplopia. The touch-test shows a large error of a spastic nature in the field of both internal recti.

10. *Spasm of Convergence, Paresis of Divergence.*

Diplopia for four months. Right pupil larger, and does not react to light. Homonymous diplopia in entire field.

Touch-test: A large spastic error in the region of both internal recti; a large paretic error in the field of both external recti. Both errors are larger with the right eye. Prism 16°, base out, before each eye, overcomes the diplopia.

Advancement of the right external rectus, without tenotomy of the internus, produced binocular vision with divergence of 2° and convergence of 25°.

11. *Spasm of Convergence.*

Johanna D., aged nineteen. Headache, diplopia on rising, for two weeks. Vision and accommodation normal.

The eyes are slightly convergent. Movement of the right eye out is limited and accompanied by nystagmus of a slower abductive phase, as if a resistance were being overcome and a quicker adductive return. Also in the position of adduction there is nystagmus of the same nature. Left eye the same. Homonymous diplopia. The lateral distance of the double images increases more rapidly than the distance from the eyes. This suggests a moderate divergence paresis.

Touch-test shows in the field of both interni a large spastic error and a small paretic error of both externi. The latter is probably secondary to the spasm of convergence, as is indicated by the nature of the nystagmus.

The condition disappeared rapidly with treatment of the anæmia.

12. *Spasm of Convergence.*

13*a*. *Right Associated Paresis, Paresis of Left Abducens* (*Spasm of Right Internus*).

Joseph L., aged forty-seven. Syphilis twenty years previously. Tabes. My. — 8 D and — 7 D. V = $\frac{20}{30}$. Accommodation normal. Position and movement of eyes apparently normal. Homonymous diplopia in entire field, the double images being less widely separated toward both sides.

Touch-test shows paresis of both external recti. In the field of the right internus there is a distinct spastic error. The left

internus shows no error. Five days later it is noted that the homonymous images are united towards the right and increase in separation to the left. As the object is brought nearer, with increasing convergence, somewhat stronger prisms are needed to overcome the diplopia, showing that beside the diplopia caused by the excess of convergence over both externi there is a weakness of convergence, becoming more marked as the object is brought nearer. Three days later it is noted that in extreme version to the right there is crossed diplopia.

Touch-test with the right eye as before, with the left eye as was indicated by the change in the diplopia. The object is touched correctly only in the median line; towards both sides there is paretic localization.

In addition to the original paresis of both externi, paresis of the left internus became apparent. This probably existed from the first but in lesser degree and masked by the spasm. It was striking that at the first examination, in spite of paralysis of both externi, there was spasm apparently only of the right internus. This coincidence of paresis and spasm in the same muscle is not surprising if the intimate association of the two conditions is considered. The limitation of motion was too slight and the relations of the double images not sufficient to establish the diagnosis without the aid of the paretic localization.

13*b*. Similar to the last case.

14. *Paresis of Both Abducentes.*

15. *Paresis of Divergence.*

In the third and final part of the paper these cases are compared and the salient points are made clear. The paper well deserves being read and an abstract cannot do it justice. The relation between paresis and spasm of an associated muscle is familiar, and is shown by the so-called spastic localization when there is merely an increased tone and before the spasm becomes visible.

The presence of spasm and paresis in the same muscle is shown in Case 13*a*.

In those cases showing a conjugate deviation, the localization was spastic on the side to which the eyes were turned, either in combination with paresis of the opponents as in Case 8 or alone in Case 6.

In these cases the distinction between paresis and spasm is difficult and may be aided materially by the test of localization.

The exceptions to the rule that in hemiplegia with conjugate deviation the patient "regards his lesion" are only apparent and need not be accounted for by the assumption of another lesion. When the eyes look away from the lesion and toward the paralyzed side, it is because the same muscles are in a state of spasm produced by a lesion which if it were more intense would cause their paralysis.

The prominent symptoms in convergence and divergence paralysis is diplopia in the entire field. The same relation of double images is seen in spasm of convergence as in paresis of divergence. Here again the localization test sheds light, as is shown in Cases 9 and 11.

The question whether one could or should distinguish paralysis of divergence from paralysis of both abducentes is discussed, and the opinion is expressed that such a distinction is not desirable, as it is probable that such a paralysis would not be a mere coincidence but due to a lesion in a spot where the functions of both eyes for convergence or divergence are seated. That paresis and spasm of convergence and divergence are not merely disorders of binocular vision but are of influence on vision with one eye is evident from the results of the localization test. On the other hand, the mechanism for the lateral movements is so closely allied to that for convergence and divergence that the tone of the muscles is dependent on impulses coming from both sources.

IV.—A Case of Abnormal Position of the Macula Lutea and Partial Coloboma of the Choroid.

By Dr. **PAUL BERNHARD**, Chur, Switzerland.

A boy, aged fifteen years, read with the left eye Sn. $\frac{4}{8}$, fixing a point 18° below. With the right eye vision was only $\frac{1}{60}$, and fixation direct. Keratoscopy showed slight inverse astigmatism. There was color blindness for red and green. The limits of the field in the left eye for white and blue were slightly con-

tracted. It was impossible to map out the blind spot, but there seemed to be a small scotoma about 10° below its normal site. In the right eye the field for white was moderately contracted, colors not clearly seen ; no scotoma made out.

Ophthalmoscopic Examination. — Left eye : edges of nerve blurred as after neuritis. The inferior temporal vein and both inferior arteries partly covered on the nerve by a whitish veil. The nerve was otherwise normally colored.

One nerve diameter below and the same distance outwards begins an area double the size of the papilla, horizontally oval and sharply defined. This spot is distinctly excavated; outwardly it is glistening white, towards its inner edge redder, and shows here a choroidal vessel ; at its upper margin there is a deposit of pigment. One nerve diameter outward from the upper margin of the spot is a dark red, roundish place exactly like the fovea centralis. No macula reflex is visible. There is no sign of the macula lutea in the place where it belongs. Fundus otherwise normal, except that in the extreme periphery there is a dense deposit of pigment.

Right eye : hypermetropia, 3 D. The nerve is somewhat pale, and blurred in outline ; vessels smaller than in left eye. Two and one half nerve diameters inwards and upwards is a similar white, excavated spot. No fovea or macula reflex is visible.

From the history it is apparent only that at the age of six months the child had some severe disease with cerebral symptoms, and was unconscious for days.

The dark red spot is probably the fovea, for when the boy fixed the ophthalmoscopic mirror this place was in the middle of the field. The fovea then is two nerve diameters below the optic nerve. This, however, does not account for more than 8° of the 18° difference between the visual axis and the line of fixation. This difference is apparently due to an abnormally low insertion of the optic nerve, which seems to be proven by the ophthalmoscopic examination at different levels of fixation. The problems suggested by the concurrence of the coloboma of the choroid and the abnormal positions of the optic nerve and macula in eyes that have undergone an optic neuritis are not easily solved.

VI.—Bacteriological, Clinical, and Experimental Investigations in Kerato-Conjunctivitis Eczematosa and Conjunctivitis Catarrhalis Simplex.

By Dr. **LUDWIG BACH,**

instructor and first assistant in the eye clinic, wurzburg;

and Dr. **RUDOLF NEUMANN,**

assistant in the hygienic institute.

The following questions are raised, and answered so far as the investigations of the authors and recent steps in research will permit: Is the name kerato-conjunctivitis eczematosa correct, or not? Which factor is active in the etiology and course — micro-organisms or scrofula?

The term kerato-conjunctivitis eczematosa was introduced by Horner and his school. Recently Axenfeld has questioned its correctness on the ground that the conception of eczema by dermatologists was quite different, but this opinion is open to discussion.

It is acknowledged that dermatologists do not recognize eczema of mucous membranes, but the conjunctiva is only in part a true mucous membrane. Only the conjunctiva of the lids, the fornix, and that covering the peripheral parts of the sclera is mucous membrane, being covered with cylinder epithelium; this passes on the bulbus into pavement epithelium; and it is only in these portions, where the epithelium resembles that of the skin, that the typical eczematous eruptions occur. Elsewhere we have only a more or less marked, diffuse hyperæmia, swelling, and increased secretion. Neisser and others consider epithelial changes the essential part of the clinical picture of eczema. The protean changes of eczema in the skin are simulated in the eye; we have small glistening elevations, vesicles, pustules, nodules of varying consistency, circumscribed infiltrations of differing colors, and, as a rule, some loss of surface tissue. There is also a varied etiology and pathogenesis. In the eye, the source of the epithelial injury which, it is assumed, precedes the eruption may easily, and most often, if not always, does, come from without. It would seem that the

authors believe that scrofula predisposes to epithelial change, but it is stated that Bach tried several times to produce phlyctenular eruptions in scrofulous patients by making slight superficial injuries in the conjunctival epithelium, but without success.

The result of the author's bacteriological experiments is inconclusive, as was that of Axenfeld. The method and precautions taken are described with much detail, but the results would not seem to warrant a transcription. Briefly, in about one third of the cases examined, organisms were found in the fresh eruptions, those at the most four or five days old, in such numbers as to appear with probability to come from the efflorescence itself. The organisms were for the most part micrococcus pyogenes aureus and albus, twice with pneumococcus, once with xerosis, once with streptococcus, and once with diplobacillus. In a second third there were so few colonies as to be of doubtful significance, and in the final third the result was negative.

It is stated, although the details are not given, that, as a rule, the inoculation of the limbus, or margin, of the cornea superficially with micrococcus pyogenes aureus, both in men and in rabbits, is followed by an eruption which would be considered eczema.

Two important points are granted by the authors which show how uncertain results in this field must be. It was impossible to say that the bacteria were in the eruption at its beginning, that they were primary, or entered it as a secondary infection, and, on the other hand, the absence of bacteria could not be accepted as proof that they had not been present at some time.

The question, whether the clinical picture of the eczematous eruption is influenced by bacteria, may be answered more directly. The varied manifestations may be attributed to different kinds of bacteria, although other factors play important parts. Among the cases mentioned are the gray superficial infiltration of pneumococcus, the pustules of staphylococcus, etc.

With regard to the part played by scrofula and concerning the treatment, nothing of importance is added by the authors.

IX. — Clinical and Experimental Observations in Electrotherapy in Ocular Diseases.

By Dr. **SILEX**, Berlin.

Allusion is made to the uses of electricity in illumination, to electrolysis for the removal of lashes, and for the treatment of vascular tumors. As to the value of this agent in the treatment of large angiomata of the orbit, the author is sceptical. The magnet and the galvano-cautery are approved. With regard to the uses of electricity in the treatment of diseased muscles and nerves, authorities differ.

It is shown that the central nervous organs are accessible to currents of therapeutic strengths. A brief review of the history of the subject precedes an exposition of the author's experiences.

A good equipment, with reliable galvanometer and rheostat, is indispensable. It must be remembered that the anode has a sedative action as compared with the more irritating effect of the cathode.

The minimum current required to produce the characteristic color and light flash on making and breaking, varies with the attention, the irritability, and the age of the individual. Silex was conscious of the flash between the limits of $\frac{1}{2^{1}3}$ and $\frac{1}{3}$ milliampères. The perception of the color and light is naturally in the cerebrum, but opinions differ as to whether the retina or the optic nerve is affected by the stimulus. The author, as a result of experiments on patients in whom either nerve or retina was involved, concluded that the stimulus affects the retina first, but that the optic nerve may be the starting-point of the current. And this is not improbable when it is remembered that section of the optic nerve under cocaine produces an intense flash of light.

A number of investigators have found that in the normal eye the constant current will produce an enlargement of the field of vision and will stimulate the light sense. Silex, in repeated experiments, conducted with more than ordinary care, was not able to substantiate these statements.

Among the conditions favorably influenced by electricity were:

(*a*) Trigeminal neuralgia, especially supraorbital. In symptomatic neuralgia, as that complicating a brain tumor or from rheumatism, the treatment is of no avail, but in pure neuralgia, Silex claims that there is no treatment superior to electricity. The anode is placed on the tender point, and the cathode on the neck (Sperling).

(*b*) Fibrillary twitching of the lids which have resisted other methods disappear in a few sittings.

(*c*) Scleritis and episcleritis; In cases where skilful treatment has brought slight or passing improvement, and where one relapse after another incapacitates the patient for years, when the disease is not syphilitic, electricity is of great service. It is best applied by the hydro-electric bath as described by Denti and Norsa [1] and by Von Reuss.[2] An eye cup is used, through one wall of which a wire is passed. The cup may be filled with a solution of salicylate of lithium or salt solution; warm water does equally well. The cup is inverted, a current of one to two milliampères allowed to flow for three to five minutes two or three times a week. Cocaine is not needed. Either the positive or negative pole may be attached to the wire in the eye cup. It is not probable that the effect is the result of cataphoresis, except to a superficial extent; that is only present when the direction of the current is often changed, and this, according to Norsa, is not necessary for the therapeutic effect. Moreover, it is not probable that salicylate of lithium would produce a local effect in any case, even if it were brought in contact with the scleral deposit.

The treatment of paralyzed muscles and of opacities of the cornea is not encouraging. A possible improvement has been attained in opacities of the vitreous, none in choroiditis, retinitis, and neuritis.

The remainder of the paper is given to a justification of the use of electricity in optic atrophy, especially for its moral effect, and to its application in neurasthenic and hysteric conditions.

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[1] *Archiv f. Augenheilk.*, xxiv., p. 186.

[2] *Wiener klin. Wochenschr.*, 1896, No. 20.

X.—Remarks about Central Visual Acuteness.

By Dr. **GUILLERY**, Cologne.

This article is controversial and deals with differences that have arisen between the author and Reche regarding methods and statements made in an article by the former.[1]

Guillery defends his method of testing vision by means of points, but adds nothing new to his previous arguments.

XX.—A Case of Dislocation of the Lens.

By Dr. **C. RITTER**, Bremervörde.

The patient received a blow on the eye which displaced the lens downward and outward. Four months later another blow caused a dislocation into the anterior chamber. The next day the lens was extracted. In this lens there was disintegration of the external fibre-layer, partial destruction of the epithelium, and complete disappearance of the nuclear zone in the fibre layers.

The author asks which of the three traumatisms endured by the lens is responsible for these conditions.

XXI.—Injury to the Eyes from Dark or Emerald-Green Lamp Shades.

By Dr. **GEORG BONNE**, Klein Flottbeck.

Three reasons are given to explain the ocular pain felt by the author and his friends after the prolonged use of green lamp shades:

1. The sudden change from the comparative darkness of the shade and room to the book or object directly illuminated.
2. The quality of the green light.
3. The rapid change of after-images.

The discomfort disappeared with the use of white glass.

XXII.—The Pathogenesis of Congenital Colobomata of the Lids.

By Prof. **J. HOPPE**, Cologne.

Case 1.—M. S., a healthy girl, aged eight, has on the left eye the following anomaly: Inward from the middle of the lid and

[1] These Archives, German Edition, vol. xxxv., 1.

about 2½ *mm* from the lid margin is a low elevation of the skin; nodular, yellowish, smaller than a bean in size. From the middle of this swelling a narrow groove passes vertically down to a notch 1 *mm* long, which penetrates the lid. Seen from below, the lid near the notch and groove seems somewhat thickened. Near the coloboma the lashes converge, those nearest crossing, and in the defect itself the lashes are lacking.

On the upper half of the eyeball lies a tumor 2–2½ *mm* thick, yellowish-white, doughy, and movable with the conjunctiva. The posterior limits were proven to be continuous with the orbital fat. In contact with the tumor is an opacity occupying the peripheral half of the upper-outer quadrant of the cornea, the vessels in which come from the conjunctiva bulbi.

No other anomalies are present.

Case 2.—C. D., a well-developed boy, aged two and a quarter years, has had for eight days measles with acute conjunctivitis. O D otherwise normal. On the left side there is a congenital coloboma of the upper lid at the junction of the middle and inner thirds. The form of the defect is rectangular, 4 *mm* broad and 2½ *mm* high; the edges are straight.

In this space there are no ciliæ, and during sleep a portion of the cornea is uncovered, and is infiltrated with pus, so that the iris cannot be seen, undoubtedly a complication of the measles.

For the pathogenesis of the coloboma in the first case the following factors are of importance: 1. The swelling of the skin on the upper lid. 2. The groove in the skin with the converging lashes. 3. The subconjunctival lipoma (evidently ectopic orbital fat).

Because of the narrow space between the lipoma and the amnion pressing upon it, a hindrance to the advance of the lid arose, constriction of the lid, and adhesion of the amnion to its most prominent part. In this way the middle part of the lid was held back and a space, the coloboma, formed by the closure of the lids, and in this place absence of lash formation. Later, separation of the amniotic adhesion, the remains of which is the small skin protrusion.

This explanation develops a view first expressed by Van Duyse in 1882.

The second case might be explained in the same way if we assume that the amnion by pressure, although forming

no adhesion, prevented the advance of the middle portion of the lid. This explanation of the cases of simple coloboma does not always suffice, however, for the gap would be more curved and not rectangular as it often is. In a case of von Ammon's[1] there was an unbroken row of lashes along the edge of the coloboma. Now we assume that the lashes have their source from an epithelial tissue which closes the lid opening temporarily; when this closure is lacking there is no lash formation; therefore this is absent in congenital colobomata, and inversely a continuous row of lashes shows that complete closure of the lids existed at the time of the lash formation. A coloboma with lashes is then of later development.

[1] Von Ammon's *Journal*, 1843, S. 98.

ABSTRACTS OF PAPERS READ BEFORE THE AMERICAN OPHTHALMOLOGICAL SOCIETY, AT ITS THIRTY-EIGHTH MEETING, AT NEW LONDON, CONN., JULY, 1902.

The post-operative history of fifty cases of simple glaucoma. By CHARLES STEDMAN BULL, of New York.

In seven cases, under observation for a period varying from fifteen months to eleven years, the fields remained as they were at the time of operation. In six of these seven cases the vision grew slowly worse, and in one case the vision was somewhat improved.

In five cases the vision remained as it was at the time of operation, or improved, while the fields grew narrower.

Age, in itself, did not seem to exercise any definitely bad effect, for some of the most satisfactory results occurred in patients over seventy years of age.

The best results as to ultimate vision occurred in the cases in which the central vision was the best and the fields were the least encroached upon at the time of operation, or, in other words, as soon as the existence of the disease was definitely established.

A careful study of these cases has led me to the conclusion that where the disease undoubtedly exists in both eyes of a patient, better results as to visual acuity and the field of vision are obtained by a simultaneous operation on the two eyes.

Finally, the operative effect of iridectomy is more certain and undeniable the earlier it is done. The slightest narrowing of the field, whether for form or color, demands operation, once our diagnosis is made. The curative action of iridectomy stands in direct proportion to the increase of tension. Early iridectomy, while the iris is still mobile, the field but little contracted, and the cupping of the disc slight, very often arrests the disease, at least for a long period, and preserves what sight remains. *Done early*,

it offers the best prospects for the arrest of the diseased process, and its effects are permanent or prolonged.

Notes of cases of simple chronic glaucoma treated by resection of the superior ganglion of the cervical sympathetic; with a report of the microscopical examination of the excised ganglia. By Dr. JOHN E. WEEKS, of New York.

Dr. Weeks reported six operations for the removal of the superior ganglion of the cervical sympathetic in four individuals, all of whom were suffering from simple chronic glaucoma. The disease was of more than two years' duration in all of them; in one case, of twelve years' duration. Iridectomy had been performed in one case without success, the eye going on to absolute glaucoma. Of these four patients the oldest was seventy years of age, and the youngest twenty-eight years.

The resection of the ganglion was performed by Dr. John F. Erdmann in two cases, and by Dr. Weeks in the remaining cases. Healing was by primary intention in all; the temperature did not go above 100° F. in any case, averaging only a little above normal. The patients were not confined to bed more than forty-eight hours, and were in condition to be discharged from the hospital at the end of a week. In all the cases the improvement in vision, in extent of fields for white and color, and in the tension of the eyeball, was marked very shortly after the operation. In two of the cases iridectomy was thought to be advisable, and was performed in one case about six weeks and in the other about two months after the operation. The iridectomy was done for acute glaucoma in one case, and for increase in tension (subacute glaucoma) in the other case.

In none of the cases has there been entire freedom from increase of tension, but the improvement in vision and in extent of the fields has been maintained in all eyes but in those which subsequently required iridectomy. All of the patients experienced some discomfort by disturbance in the circulation of the brain due to the vasomotor paralysis. Danger to life after this operation was estimated as practically nothing. The condition of the eyes requiring subsequent iridectomy was not made worse by the sympathectomy.

It occurred to the writer that the fellow-eye was influenced but little, if at all. The operation known as the anterior operation—incision along the anterior margin of the sterno-mastoid muscle—was advocated. An incision longer than two inches is unneces-

sary. Interference with the recurrent laryngeal nerve cannot occur if the operation is done as advised. The operation need not require more than twenty minutes in its performance.

The conclusions arrived at are: (1) Sympathectomy is of no value, and may be harmful in acute glaucoma. (2) In hemorrhagic glaucoma it may be of some value and should be tried. (3) In subacute and simple chronic glaucoma, iridectomy and sclerotomy should be first employed; if these fail, sympathectomy may be resorted to. The writer characterizes the conclusions of Jonnesco and Ball as entirely too sanguine.

The examination of the ganglia removed, together with the control examination, was made by Dr. Ira Van Gieson, and was reported on in full. His summary is as follows:

As far as the methods of examination of hardened material go, the ganglia seem to be normal, with the exception of an excess of pigment in the neuron cell-bodies; and as to the significance of this, if it has any, we are as yet entirely in the dark. With the exception of the increase in pigment, it is doubtful whether any one could distinguish the glaucoma sections from the normal ones. The operation seems to depend upon the carrying out of a well-known physiological experiment in its effect on glaucoma rather than upon the removal of a morbid condition. At the same time, however, the result of the examination does not positively preclude the existence of a lesion in the ganglia.

Extraction of metallic fragments from the vitreous chamber. By Dr. S. D. RISLEY.

In a brief paper on this subject, Dr. Risley, of Philadelphia, said that since a renewed interest had been awakened in the giant magnet by Prof. Haab's recent visit to this country, he thought the time opportune to discuss the relative merits of extraction by this powerful instrument, and the methods more generally employed in this country, viz.: the extraction by aid of the weaker and more portable magnets, through an opening in the sclera at the known site of the foreign body; a method which, he said had been rendered practicable by the exactitude with which iron and steel particles can be located by the skiagraph. Four illustrative cases were presented, in which the steel fragments had been removed through the scleral puncture, in all of which the eyes had been preserved with good vision, in one with no impairment. In no case had detachment of the retina followed, although six, eight,

ten, and eleven months had elapsed since the extraction in the respective cases. In discussing the relative merits of the two procedures, Dr. Risley said that it could not be denied that opening the sclera, choroid, and retina in the manner described in the recorded cases was to be deprecated, since it gave rise to danger from infection of the globe; then, too, the protruding bead of vitreous, and the ensuing hemorrhage from the severed choroidal and retinal vessels might interfere with the closure of the retinal wound, or cause a retinal detachment. These dangers, however, could be minimized by aseptic precautions and a meridional section. In a large number of cases he had not seen either accident occur. In either of the cases presented for illustration of the method, he thought that the giant magnet would have drawn the fragment into the anterior chamber, if skilfully manipulated, whence it could have been finally extracted through a corneal section. This method, he said, would doubtless be better than to have made a wound in the sclera at random, through which to search blindly with the tip of a feeble magnet, thrust deeply into the vitreous, for a foreign body supposed to be somewhere within the eyeball. The problem was, however, quite a different one when not only the existence but the size and precise location of the body were known. It then became a question whether the dangers from a scleral puncture were more to be feared than the dragging of the ragged-edged, foreign body through a new track in the vitreous, over the ciliary processes, with the danger of entanglement in the iris or of injury to the lens capsule before reaching the anterior chamber; once there, the dangers incident to its final delivery through an opening in the cornea, infection of the ball, etc., were to be considered. Then, too, if the foreign body were impure, the probability of infection was greatly enhanced by its new pathway through hitherto uninjured tissues. In closing, he thought these inquiries could be satisfactorily and definitely answered only by men of extended experience.

Discussion: Dr. HERMAN KNAPP, New York: Dr. Risley has presented a number of cases which show the utility of the small magnet distinctly. The small magnet is useful in those cases in which the foreign body can be located definitely with the ophthalmoscope, the sideroscope, or the X-ray. For several years I have used the Haab magnet preferably, and have resorted to the small magnet only exceptionally, as the primary success was repeatedly seen to be followed by detachment of the retina.

It is known that after perforating injury to the sclerotic it is two years at least before we can say that there will be no detachment of the retina. The cases need not show reaction at first, but may do so later, as the detachment of the retina forms slowly. The method of getting foreign bodies out of the vitreous into the anterior chamber is successful in many cases, and where it is so, the results are ideal. I have had a number of them, and my son has had several of the same kind. I have followed the method Haab described three years ago. The method is especially adapted to foreign bodies in the vitreous that are not very large. The magnet should be applied to the centre of the cornea when you do not know the location of the foreign body, and then carried gradually downward. As soon as you see a bulging, you know the foreign body is there. Then, placing the magnet higher up, the foreign body moves up and comes through the pupil. If the foreign body does not move, I make the incision into the cornea and iris, where the latter is bulging. In the cases in which the foreign body does not injure the iris and ciliary body, you cannot notice, in a few weeks, that anything has been done. Injury to the sclerotic is always dangerous, and I can recommend the above method, based on a good deal of experience. If you do not know the location of the foreign body, use the X-ray, but when the patient comes to you fresh, put him before the magnet, and very frequently it will be found that nothing else is necessary. When you put the magnet to the apex of the cornea, you cannot do any harm. You only have to try this method to be fascinated with it.

On the confusion in methods of using prisms. By Dr. LUCIEN HOWE, of Buffalo, N. Y.

The writer called attention to the facts:

First. That there still remains a difference in the methods of numbering prisms adopted by different opticians, and that in the higher numbers this difference is sufficient to be of real clinical importance.

Second. Another cause of confusion is in the tests which we make to determine the position of the eye when at rest, some practitioners using one test in one way, others using the same test in such a manner as to give a different result, and still others using other tests without regard to details which would influence the result.

Third. In testing the dynamic condition of the muscles, the power of convergence and divergence, there is a similar lack of uniformity, some practitioners commencing with a weak prism, gradually increasing the strength, others commencing with a prism strong enough to produce diplopia from the first, and gradually decreasing the strength, obtaining entirely different results.

Fourth. There is confusion in the terms used to express the conditions found after the tests with the prisms have been made.

In Europe the nomenclature first suggested by Graefe is still in use, while the terms "esophoria," "exophoria," etc., have been quite generally adopted in this country and are occasionally used in England.

In view of this confusion as to the prisms themselves and the method of using them to determine both the static and the dynamic condition of the muscles, it was recommended that the subject be considered by an international committee which would recommend a uniform method.

The following is the resolution adopted by the Society:

Whereas, a uniform method or methods of making tests of muscular anomalies would enable ophthalmologists to understand each other better, would tend to give more uniform results of examination, and probably better results of treatment. Therefore

Resolved: That this Society appoint a committee, who shall endeavor to have attention called to the subject in National Societies of Ophthalmology, and in the Section of Ophthalmology at the International Medical Congress in Madrid next April, in order that, if deemed advisable, a plan may be formulated and acted upon by the International Ophthalmological Congress in Switzerland in 1904.

On the primary insertion of the ocular muscles. By Dr. LUCIEN HOWE.

The paper deals with the insertions of the tendons only, not with those bands of connective tissue which, passing from the muscle to the globe or to adjoining structures, also serve as smaller or secondary attachments.

In spite of all that is written concerning the action of the ocular muscles and operations which involve their insertions, comparatively few accurate measurements have been made of the length of these insertions, their exact position, or the positions and form of their arc.

The plan adopted by the writer was similar to that followed by

Fuchs. The position of the vertical and horizontal planes and the equator having been accurately determined, these were marked by fine rubber bands. These lines in addition to the edge of the cornea serve as fixed lines from which measurements could be made. At least three points in each insertion were taken to determine the length of the arc of the insertion. Incidentally also note was made of the point of exit of the vorticose veins with respect to the muscle. In this way twenty-one eyes were examined and the measurements plotted after the manner of the Mercator projection.

The results were:

First. In regard to the recti.

These were not essentially different from former measurements of a similar kind.

The tendons were found to be inserted in a spiral, beginning with the internal rectus a little more than five millimetres from the edge of the cornea, touching the insertions of the inferior, the external, and the superior, the last being about seven and three fourths millimetres from the corneal margin.

The position, length, and arcs of the recti were also comparatively constant.

Second. The insertion of the superior oblique was found to be more variable than that of the recti as to its position, its length, and its form. The insertion of the inferior oblique was the most irregular of all.

Third. The tendons of the two latter muscles have an important relation to the exit of two of the four or five vorticose veins, being so situated as to compress these veins very decidedly.

Analysis of forty-two cases of ossification in the eye, including four personal contributions. By Drs. B. L. MILLIKIN and JOHN C. DARLEY, Cleveland, O.

All reports of ossification in the eye record previous eye disease, usually dating back many years. These eyes were probably all sightless, and usually shrunken, with an almost invariable history of previous inflammation, which in the large majority of cases followed traumatism.

Ossification in the eye has never been reported as occurring in childhood.

Sympathetic irritation occurs in a large majority of cases. Malignant disease was found in three cases. The retina is often found degenerated, is often detached. The lens is often calcareous and

shrunken. In most cases the bone has been found as an incomplete shell just internal to the choroid, and occasionally it completely invests the inner surface of the latter. Ossification in the eye always occurs in new-formed or altered normal connective tissue. It is a true metaplasia of fibrous tissue into bone, and the presence of cartilage has never been demonstrated. Any connective tissue resulting from the organization of an inflammatory exudate may ossify, but the exudations from the uveal tract, especially from the chorio-capillaris, are the usual seat of ossification. This exudation occasionally invades other structures in the eye, such as the retina or lens, and ossification may take place.

Lastly, ossification occurring in the lamina vitrea, as described by Alt, is probably a similar process occurring in this membrane, following inflammation and subsequent organization.

Additional notes on a case of high astigmatism. By Dr. B. L. MILLIKIN.

In 1893 a patient was reported with astigmatism as follows:

O D — 10.00 D axis 90° ⊂ + 7.00 D axis 180°
O S — 6.00 D axis 100° ⊂ + 4.00 D axis 10°

with practically normal vision.

A recent examination gave the following result:

O D — 16.50 D axis 100° ⊂ + 10.00 D axis 10°
O S — 8.50 D axis 100° ⊂ + 6.00 D axis 10°

the vision in the right eye being $\frac{6}{6}$; left V = $\frac{6}{6}$. In the eleven years during which the case has been under observation, the total mixed astigmatism has increased from 17.00 D to 26.50 D in the right eye, and from 10.00 D to 14.50 D in the left, with good ability to use eyes for all purposes.

Congenital orbital cyst with anophthalmus or microphthalmus. By Dr. GEORGE C. HARLAN, of Philadelphia.

A second case of the curious and rare anomaly.

In a case reported to the Society in 1893, the cyst filled the whole orbit and pushed forward both lids with great tension and stretching. The patient died, and careful inspection of the orbit revealed no trace of an eyeball or optic nerve. The present case is a typical example of the large proportion of those recorded, which are usu ally described as "congenital lower-lid cyst with microphthalmus." The patient was a delicate-looking but apparently healthy girl seven

years of age, without other history than that the tumor was supposed to be congenital and thought to be increasing in size. The left lower lid was pressed forward by a large incompressible but tensely fluctuating cyst, the bluish color of which was evident through the thin and distended skin. The external dimensions of the tumor were 40 by 25 *mm*, and the lower margin of the orbit was 5 *mm* below the level of that of the other eye. The interpalpebral commissure was pushed upward and arched by the pressure of the tumor, and opened into a deep conjunctival sac above the cyst. At the bottom of this sac could be felt a rudimentary eyeball, apparently scarcely larger than a pea, which moved freely in unison with the other eye. The right eye was perfect, and no abnormalities could be found elsewhere.

The cyst was removed without serious difficulty. It was found to extend back to the bottom of the orbit, but connection with the rudimentary eye could not be demonstrated. It was filled with a clear yellowish fluid. Dr. Flexner, the pathologist of the Penna. Hospital, has furnished the following report of its examination: "The outer layers of the section show muscle and adipose tissue. The inner layer consists of sclerotic fibrous tissue, in which sparse blood-vessels of small calibre but thin walls occur. The innermost layer is somewhat polypoid in appearance, as there are irregular elongations projecting into what was doubtless the cavity of the cyst. In these there is much dark brownish-black pigment, sometimes clearly within cells. Lighter yellow pigment also occurs, being extravasated blood and hematoidin. Extending into the sclerotic tissue along rifts in the section are similar pigmented cells and hematoidin; these masses are included in highly cellular tissue in which the cells are oval and round but larger than those of the granular layer of the retina. In some sections the pigment forms an almost continuous layer within the cavity of the cyst and, under a high power, yellowish-brown or it is resolved into fine yellowish-black granules. It also appears in branching cells in the sclerotic layer. No true retinal elements persist."

The pathology of these cysts is very obscure. Most authorities agree that they are formed of embryonic elements intended for the development of an eye and are the result of an imperfect closure of the fœtal fissure, though a few insist that they have no necessary connection with the globe whose development is prevented by their presence. Cases occurring in connection with

complete anophthalmos, which are rare, have been thought to be analogous to hydrophthalmos. A review of the literature with bibliography is given in the former report (*Trans. Am. Oph. Soc.*, 1893).

A case of endothelioma of the orbit. By Dr. C. A. VEASEY, Philadelphia.

The patient, a male aged thirty-five years, first observed a small nodule in the lachrymal gland region twelve years before examination, which had gradually increased in size.

At the time of examination it was kidney-shaped, mobile from side to side, but with deep attachments in the orbital cavity, and the eyeball was pushed slightly toward the nose and downward. There was also some impairment of the upward movement. Vision was normal in each eye, and there were no ophthalmoscopic changes.

The growth was extirpated, measuring $2\frac{1}{2}$ *cm* × $1\frac{1}{2}$ *cm* in size, and microscopically proved to be a lymphangio-endothelioma. A year has elapsed, and there has been no recurrence.

A case of cavernous sinus thrombosis following grippe; autopsy. By Dr. EDWIN E. JACK, Boston.

Male, aged forty-three. Illness began with symptoms of grippe and facial neuralgia. After a few days there was a remission, to be followed shortly by a renewal and increase in the severity of the symptoms. Two weeks after the onset, O. D. began to be prominent and next day O. S.; temp. varied from 100° to 101°. When first seen by the writer, patient lay in a stupor, from which he could be with difficulty aroused.

Exophthalmos O. U., conjunctivæ chemotic, pupils moderately dilated but reacted to light. Fundi—somewhat, though not markedly, dilated veins. No œdema over mastoids. Patient grew worse very fast. Operation was deemed inadvisable, and death came within thirty hours of the first observation. Temp. ran up to 106.5°; pulse difficult to count.

Autopsy by Dr. F. H. Verhoeff:

Empyema of sphenoidal cells. Thrombosis and suppuration of cavernous, circular, right inferior petrosal, left superior and inferior petrosal, and left sigmoid sinuses. Thrombosis of right jugular vein. Suppuration of left post-orbital tissue. Purulent meningitis. Embolic abscesses of the lungs.

The question of operative interference in these cases is important. In a case seen by the writer and operated on by Dr. E. W.

Dwight, the efficacy of operation (in this case trephining the temporal bone low down, lifting up the temporal lobe, and incising the sinus) was shown by the rapid recession of the exophthalmos and general improvement in the patient's condition.

It was too late, however. Here, it seems to the writer, is where the greatest difficulty comes in. It is hard to be sure of the diagnosis until the process is too far advanced. The fundus appearance and œdema of mastoid are not symptoms that can be relied upon to determine the diagnosis. It seems fair to state that surgical measures could accomplish much, if attempted at an early period.

A case of double metastatic carcinoma. By Dr. EDWIN E. JACK, Boston.

Female, æt. forty-five, always had been well except for rheumatism. Father died from cancer of the lip (pipe smoker); one sister died of tumor of the breast. Typical scirrhus of the left breast, nine years' duration, never operated on; involvement of left axillary glands. O. S.: separation of the retina; T +. Diagnosis of metastatic carcinoma made. Eye enucleated; orbital tissue not involved. Eye was examined by Dr. F. H. Verhoeff, and intra-ocular tumor of undoubted metastatic origin found.

This makes the twenty-ninth case of ocular metastatic carcinoma reported. Twenty-three of these have been in females, and five in males; one clinical history unrecorded. Of these, nine have been double, and all but one in females. The primary tumor in these double cases was in the breast in eight, including the male; and in the lung in one.

Case of melano-sarcoma of the choroid, filling the orbit. By Dr. S. B. ST. JOHN, Hartford, Conn.

A lady, about seventy years old; first seen three years ago, with history of a blow on head two years before. Not much inflammatory trouble, but loss of vision, which increased slowly but steadily. When seen, V = o; T + 2. Some dull discomfort. There was a salmon-colored patch on the sclerotic. Ordered eserine, $\frac{1}{8}$ gr. t. i. d. She did not present herself again for three years, when she came because of more discomfort, but especially because of black lumps on the sclera. The eye was absolutely immovable. T + 3. No tenderness. Enucleation advised, and performed at once. Much dull dissection required, and at inner side orbit the mass was fast to the ethmoid plate of the orbit. Recovery

uninterrupted and smooth. The mass adherent to the eyeball was about twice the size of the globe. The growth started from the choroid near the optic nerve, half filled the vitreous, slightly dislocating the lens, and then penetrated the sclera in two places, one being at the site of the salmon-colored patch noted three years before. Posteriorly the mass reached back nearly to the apex of the orbit, and was fairly smooth, except at the point of attachment to the ethmoid bone, at which place the melanotic material was more abundant.

Microscopically the growth in the vitreous chamber was typical *spindle-celled* sarcoma, while the orbital part was distinctly alveolar sarcoma. The enucleation was about four months ago and there is yet no sign of return.

An instrument for the correction of the refraction by the use of the circle of diffusion. By Drs. W. THOMSON and A. G. THOMSON, Philadelphia.

In 1872, Dr. William Thomson described a method of measuring refraction aided by the use of the circle of diffusion.

The instrument consisted of four discs with small openings. One of the discs contained two openings, 3 *mm* apart, one opening of which could be covered with a piece of ruby glass. The test was a small point of light which in ametropia appeared double; further, that the one opening made red appeared in myopia on the same side with the opening covered by the red glass; in hypermetropia it was crossed.

The desire to complete this experience induced us to submit the following instrument, which simplifies the coloring of a small portion of the light passing through the cornea by acting on the entire half of it. It consists of a piece of ruby glass flashed on one side, ground down to make its edge thin, cut into a semicircle, the opening being half a centimetre, one half red and one half white. This is adjusted posterior to the eyepiece of the ordinary Galilean telescope, ranging in focus from plus 5 to minus 7 D and magnifying 2½ times.

The telescope is mounted on a stand, which may be adjusted so as to be able to fix on a point of light 6 *m* distant. The same semicircle may be mounted in an opaque test disc the size of an ordinary test glass and may be used with the test frame. It may also be used with De Zeng's refractometer.

The instrument is fixed on the light, and the patient adjusts his head so as to split the light into half red and half white. This

would be made more demonstrable by overcorrecting the patient by several diopters. By looking through either the red or white, the axis of the astigmatism can be fully perceived.

The line dividing the red light from the white is placed parallel to the axis of astigmatism and the telescope adjusted until the red and white lights fuse. The instrument is then turned so as to be perpendicular to the former axis and the lights fused in that meridian.

This mode of testing refraction is very important, in fact being the only way of correcting in the following class of cases: such as opacities of the cornea due to injuries or interstitial keratitis, irregular astigmatism, or opacities in the lens; in fact, anything that interferes with the transparency of the media and where other tests are impossible, such as retinoscopy, the ophthalmometer, direct method with the ophthalmoscope, and where the vision is so poor that the patient is unable to distinguish between the test lines or letters.

Our records show many cases where this mode of correcting the refraction has been exceedingly valuable and successful.

The results of treatment of epithelioma of the eyelids by the Roentgen rays. By Dr. WILLIAM M. SWEET, Philadelphia.

In one case the disease had existed for twelve years, destroying the left eyeball, a large portion of the eyelids, and extending a short distance across the bridge of the nose of the right side. Under thirty-six exposures to the rays, varying from five to ten minutes' duration, the ulcerated area externally entirely healed over, and the orbital disease showed slight diminution. In a second case of epithelioma of the temporal portion of the lower lid, the ulcerated area, measuring 1.5 by 1 *cm*, entirely skinned over after twenty-two treatments, leaving a small indurated mass at the external canthus for future treatment. Photographs exhibited showed the remarkably favorable effect of the treatment.

In giving the exposures to the rays, the healthy tissue is protected by thin sheets of lead, in which an opening is made corresponding to the area to be treated. A tube of low vacuum, placed from six to ten inches from the part, gives the most prompt results.

A methyl-alcohol debauch and its results. By Dr. H. W. RING, New Haven.

A history of seven people who showed marked symptoms of wood-alcohol poisoning.

They were all Poles, and were accustomed to drink at times a mixture containing alcohol, sweetened water, and coffee. The alcohol used was proved to be wood alcohol purloined from a factory where one of the victims was employed, although supposed to be "good alcohol."

No. 1 drank about one-half pint of mixture containing sweetened water, black coffee, and alcohol. When seen by a physician was comatose, fairly good pulse, sighing respiration, widely dilated pupils, and had become blind. Albumen in urine. Died. Uræmia was thought to be cause of death. No autopsy.

No. 2 made mixture of sweetened water and wood alcohol equal parts, and during the forenoon drank about seven ounces of the mixture. In a few hours there was dizziness, nausea, vomiting, and at 6 P.M. vision so bad that lighted lamp in room could not be seen. Had vigorous treatment during the night, and sight restored at 9 A.M. next day, and her general condition normal.

The next five patients partook at one time of a mixture containing sweetened water, wood alcohol, coffee, and home-made wild cherry wine.

It was estimated that the quantity of wood alcohol consumed by

No.	3	was	5½ drams,
"	4	"	16 "
"	5	"	21 "
"	6	"	40 "
"	7	"	37 "

They all had similar symptoms, differing in degree. Dizziness, nausea, vomiting, and sighing respiration were common to all.

Nos. 3 and 4 recovered, without visual disturbance, within twelve hours.

No. 5, a woman, died within twenty-four hours, with loss of vision before comatose condition came on. An autopsy showed only marked congestion of all organs, with dark liquid blood, as in narcotic poisoning.

No. 6 became blind, with white atrophy of optic nerves, and has remained so in spite of treatment.

No. 7 was given strychnia injections almost daily for a year, getting frequent physiological effect and vision raised from R $\frac{2}{200}$ to $\frac{6}{200}$, and L $\frac{1}{200}$ to $\frac{10}{200}$, and a fairly good field of vision and color perception, with moderately active pupils. *In statu quo*

during past eighteen months. There is an absence of central scotoma, but other conditions and symptoms were characteristic of methyl-alcohol poisoning.

Only one of these persons (No. 6, who became hopelessly blind) drank liquors regularly, and sometimes excessively, and they were not heavy users of tobacco.

Models in demonstrating the elementary physiology of vision. By Dr. B. A. RANDALL, Philadelphia.

The Doctor spoke of the great superiority over diagrams of working models for demonstrating the elementary facts of optics and of the physiology of vision, and showed some of a simple series which he had employed in the University of Pennsylvania, the most complex serving to show the correlation of accommodation and convergence, their relative fields, and the causation of concomitant strabismus. Most effective and inexpensive was a large astigmatic eye, which the student could make for himself from a common gas-globe in which 4 D of simple hypermetropic astigmatism was due to the curves of the cornea, and could be exactly corrected or converted into mixed astigmatism by a toric lens in the position of the crystalline lens.

The conjunctival flap and the cataract wound. By Drs. F. M. WILSON and H. S. MILES, Bridgeport, Conn.

The making of some sort of a conjunctival flap is probably as old as the operation of cataract extraction.

No doubt every surgeon who has made his incision at or near the sclero-corneal junction has, at times, included more or less conjunctiva.

From Daviel's time in the middle of the eighteenth century to the middle of the nineteenth almost all incisions were corneal.

In using a triangular knife it was customary to make a complete corneal incision.

Since the Graefe knife was introduced, more conjunctival flaps have been made.

In the published reports of series of extractions during the last fifty years, and the descriptions of the incisions, we find some operators always avoid a conjunctival flap; the majority aim their incisions at the margin and at times, more by accident than intent, secure a small conjunctival flap; a few dip their knives back and finish through conjunctiva.

After the return to extraction without iridectomy, and with it a

larger number of prolapses and incarcerations, more attention was paid to the conjunctiva, and some European operators, especially Snellen, turned the knife under the conjunctiva and made a *large* flap.

Schweigger conceived the idea of leaving a conjunctival bridge and extracting the lens sidewise, but says, after describing the manœuvre: "Who can think of anything smart or stupid that nobody has thought of before! On consulting my books I found that Desmarres had done the same thing in 1851." He then tied a broad conjunctival flap and sutured it after the extraction, but was not satisfied with either procedure.

A few other men have sutured the cornea or cornea and conjunctiva.

Snellen, Sr., has for a long time made it a rule in all simple extractions to have a *large* conjunctival flap; his incision includes half the cornea, and turning the knife slightly backward he secures a triangular flap 6 or 7 *mm* high.

At the meeting of the Ophthalmological Section of the New York Academy of Medicine, Jan. 20, 1902, which was given up to the discussion of cataract operations, the incision was described as being "at the junction of the opaque and transparent margins." The small conjunctival flap and the large flap, such as Snellen makes, were mentioned but not advocated.

The cases are seventy-four in number occurring in a series of one hundred consecutive extractions.

THE VISUAL RESULTS.

1. Total failure from chronic irido-choroiditis.
1. Pulled-up pupil with good field.
4. $\frac{5}{200} - \frac{10}{200}$
3. $\frac{10}{200} - \frac{20}{200}$
18. $\frac{20}{200} - \frac{20}{70}$
41. $\frac{20}{70} - \frac{20}{30}$
32. $\frac{20}{30}$ or better.

The flap used was the "Larger Conjunctival Flap" advocated by Snellen. The most conclusive experiment as to its power to hold the wound together is as follows: If during an operation just before the expulsion of the lens the speculum is taken out, the larger conjunctival flap is very apt to be manipulated into place by the upper lid, and if this does occur it may almost be classed as an accident, for no ordinary pressure on the globe will dislodge it,

and it is uniformly necessary to reopen the wound with the spatula before the lens can be delivered. This is of course an annoyance at the time, but does clearly show the adhesive power of the flap. Every flap held fast, no one of them sloughed. There was less prolapse but more incarceration. There is of course more hemorrhage with the flap, and the flap is in the way if an iridectomy is necessary or soft cortex has to be manipulated out.

Two unusual complications following cataract extraction. By Dr. THOMAS R. POOLEY, New York.

In the FIRST CASE death resulted from diabetes one week after the operation. The patient was a woman of sixty, who was operated upon December 4, 1901, by Dr. Taylor; the operation with iridectomy was without accident, with some cortical matter left behind in the anterior chamber. She had been suffering from diabetes for several years and had been coming to the clinic for eight months. Dr. Warner had treated her for a considerable time, but there was still some sugar in the urine at the time of operation.

Other than a slight hemorrhage into the anterior chamber, the result of striking her eye against the bed, the healing process went on quite favorably. Two days after the operation she became a little incoherent and drowsy, which condition rapidly developed into a profound diabetic coma, of which she died one week after the operation, in spite of all treatment, directed to the general disease, which seemed of no avail.

The SECOND CASE was that of a man of sixty-five, operated on by simple extraction for a mature cataract of the right eye without any mishap whatever. He was a chronic drunkard; had had several attacks of delirium tremens, which, however, was not known until after the operation. Just before the operation he took one pint of whisky. He bore the operation well.

The day following the bandage was removed. There was but little injection of the eye, no prolapse of the iris, and a perfectly round, central, black pupil, but the patient was talking incoherently, and later became delirious. March 6th, delirium tremens had fully developed; the wound, however, was closed, anterior chamber restored, and if aroused he could count fingers. From this time on, in spite of the most heroic treatment, he became excessively violent, could only be controlled by main force, and all

the drugs resorted to quieted him only a few hours. It was not, however, until the fourth day after the operation that the wound was opened. There was a large prolapse of the iris; infiltration of the wound ensued, the anterior chamber was filled with pus, and as his delirium continued without abatement, and the condition of his eye became hopeless, the patient was sent to his home by his family physician.

The interest in these cases lies in the fact that any pre-existing disease or abnormal condition, although it may have been improved or held in abeyance by previous treatment, is very likely to be aggravated by any surgical operation. The writer thought, however, that diabetic cataracts should be operated. He had frequently done so with success, and this was his first disaster. In all cases, however, the disease should be carefully considered and treated.

In the other case the great importance of becoming acquainted with the previous history and condition of the patient was made manifest by the fact that, had it been known that the patient had suffered before from several attacks of mania a potu, more rigorous methods might have been prepared to prevent his injuring his eye and its consequent loss from trauma and infection.

Injection of an emulsion of typhoid bacilli into the anterior part of the vitreous of rabbits and other animals. By Dr. CHARLES A. OLIVER.

They were followed by varying degrees of hyperpyresia lasting twelve to sixteen days. The animals refused food and lost weight. A number of them developed the characteristic signs of true myelitis. Some succumbed to toxine asthenia. The iris promptly (twenty to forty-eight hours) developed intense hemorrhagic inflammation. The choroid and cornea were less affected. Gradually the inflammation advanced in intensity and extent. Hemorrhages and yellowish-gray patches containing typhoid bacilli were found in the interior and the surroundings of the eye, without pyogenic infection. Endo- and peri-arteritis, periphlebitis and phlebitis, leucocytic masses, hyperplasia, and degenerative changes were marked. The next stage was a purulent panophthalmitis, the bacilli typhosus being replaced by a number of other microbes.

BRITISH MEDICAL ASSOCIATION. REPORT ON ITS MEETING AT MANCHESTER, JULY AND AUGUST, 1902.

By Mr. C. DEVEREUX MARSHALL.

WEDNESDAY, JULY 30TH.

Owing to illness, the President, Dr. David Little, was prevented from being present, and his place was taken by the Senior Vice-President, Dr. Glascott.

In his opening address the Chairman expressed his great regret that Dr. Little was unable to be present. He sketched the history of the Eye Hospital and the progress of ophthalmology in the city of Manchester.

Mr. Marcus Gunn opened the discussion on **functional (hysterical) derangements of the eye.** He described the various conditions met with. In regard to diagnosis, the chief difficulty was to distinguish between this condition and malingering. He thought that in cases where neutralized glasses brought the vision up, the blindness was really assumed. Complete double amaurosis is exceedingly rare. He himself only knew of one case, and in this the blindness was really feigned, and it was entirely cured by suggestion.

With regard to pupil reflexes, he put great stress on their direct and indirect action. He described a case of extreme blindness due to functional conditions and also some due to injury. The cases fall into two groups: (1) Idiopathic, mostly seen in women and children. (2) Traumatic, seen entirely in adults and in both sexes.

Mr. Holmes Spicer asked if it were a fact that when in a case of functional amblyopia the helicoidal field was obtained with one eye, whether the other eye, if it had been covered up, would show the field as small as on the other side. He also

discussed the pupil reactions. Mr. McGILLIVRAY said he was sure that in Dundee such cases were very much less common than in England. Dr. HILL GRIFFITH thought the great difficulty was to know whether to class the patient as a culprit or as a patient, and to know how many of the symptoms were feigned and how many were real. He thought it was much easier to distinguish between functional and organic than between functional and feigned affections. Mr. DOYNE described a case following injury, in which it turned out that most of the patient's eye symptoms were due to tobacco. Dr. GLASCOTT said that these cases were fairly common in England, and he described one in which there appeared to be no perception of light, but which was cured by suggestion.

Dr. KARL GROSSMAN (Liverpool) described a case of **ivory exostosis** of the orbit, upon which he had performed many operations and had had the patient under his observation during the last eighteen years. He also exhibited him. The eye had first been much displaced, and the cornea had subsequently sloughed. An enormous amount of bone had from time to time been removed, and the nasal cavities had been invaded. Dr. Grossman had, at last, done some plastic operations which not only filled in the large gap but also wonderfully improved the patient's appearance.

Major M. T. YARR, R.A.M.C., read a paper on **indirect gunshot injuries** of the eye. In his first case a Mauser bullet passed through the face, just below but outside the orbit. This caused blindness, with extensive fundus changes in one eye, while the other remained normal. In the second case there was a contusion of the left eyebrow, caused by an accidentally exploded cartridge. This caused impairment of sight, slight ptosis with contraction of the visual field, some patches of atrophy of the choroid, and disturbance of pigment at the macula. The interest in these cases lay in the fact that in neither case was the orbit wounded, although such extensive damage was done to the eyes.

Mr. BISHOP HARMAN described a case he had seen in South Africa, in which a **detachment of the retina in one eye and the development of slight myopia** in the other occurred as the **result of the explosion of a shell close to the patient.**

Mr. LEE had seen a somewhat similar injury followed by retinitis proliferans, and in another a large intraocular hemorrhage following a bullet wound of the orbit.

Dr. J. A. MENZIES described some cases of **detachment of the corneal epithelium.** They usually follow an injury, and are due to defective attachment of the epithelium to Bowman's membrane. The condition is one which causes considerable pain, for which some authors have advocated cocaine. The preventive treatment consists in keeping the lids quiet after an injury, and for the treatment of the actual condition the loose epithelium should be removed and the surface scraped.

Mr. DEVEREUX MARSHALL thought the use of cocaine was to be deprecated, as it would still further tend to cause disintegration of the epithelium. Mr. SIMEON SNELL thought peritomy would do as much good and be less likely to damage the cornea than scraping. Mr. HOLMES SPICER thought these cases were of herpetic origin and that the lids should be kept from rubbing the cornea by bandaging. In one intractable case he had done iridectomy, and the patient had had no recurrence since. Mr. DOYNE said he had tried almost everything for this troublesome condition, except peritomy. He strongly disapproved of cocaine. He suggested that it was possibly due to a defect in the endothelium of the anterior chamber, which allowed fluid to pass through. He had cured one troublesome case with iridectomy; another relapse after several years the galvano-cautery sufficed to cure. Mr. MCGILLIVRAY (Dundee) mentioned one case which never relapsed so long as the patient was taking thyroid extract, in spite of the fact she had no myxœdema. As soon as the treatment was left off, a relapse took place. He thought that cocaine was only harmful if used in watery solutions; if used as ointment, drying did not take place and the epithelium remained uninjured. Mr. BISHOP HARMAN described a somewhat similar condition which affects the epithelium of fishes.

Mr. C. G. LEE (Liverpool) described four cases of **monocular neuritis** which had recently come under his care. The *first* was a girl, aged thirteen. When seen there was a completely choked disc on the right side, with vision reduced to shadows. There was no general condition to account for it, but under treatment with mercury, iodide, etc., the condition subsided and the vision improved to $\frac{6}{9}$ and Jr. i., with some pallor of the disc.

The *second* was a man, aged thirty-nine, who, while at sea, three weeks previously, had had severe pain in the right temple, with failure of the sight of the right eye. The vision was reduced to $\frac{6}{18}$, and there was well-marked neuritis. Leeches, mercury, and

iodide were used, when the condition subsided and the vision improved to $\frac{6}{9}$.

The *third* case was a lady, aged twenty-four, who was run-down and highly nervous. There had been headache, and the vision of the right eye was reduced to counting fingers. Under similar treatment this also subsided, and the vision improved to $\frac{6}{12}$.

The *fourth* case was that of a boy of eighteen, with identical symptoms. He likewise improved.

In none of these cases was there either syphilis, influenza, renal or cardiac disease. No exposure to noxious vapors, no excess of tobacco or alcohol, nor anything else to account for it. The origin is most obscure.

Dr. HILL GRIFFITH thought they were likely to be retro-ocular in origin. Mr. DOYNE thought that the color fields would assist in determining their nature. In all he had seen there was a central scotoma. Mr. LEE said that the fields were not such as to suggest a scotoma being present.

Mr. SIMEON SNELL (Sheffield) described a method he had lately been practising for uniting the cut tendons after enucleation of the eyeball for the purpose of obtaining a better stump for an artificial eye to rest upon. It consisted of bringing the cut tendons forward, and suturing them together.

Mr. ERNEST CLARKE also described another modification for producing the same effect. This was especially intended for the subsequent wearing of Snellen's artificial eyes. Dr. EDWARD ROBERTS also described a method he was in the habit of using. Dr. KARL GROSSMAN was not in favor of the introduction of glass globes, and he thought that Mr. Snell's method was simple and effective.

THURSDAY, JULY 31ST.

Mr. SANDFORD (Cork) opened the discussion on **sclero-keratitis.** He discussed the etiology of the disease, and also its treatment. He thought that the hypodermic injection of pilocarpin was most useful. His experience of subconjunctival injections was not good, and even when good results had been obtained, he did not think they were better than the results obtained by other methods, while the severe reaction which frequently came on afterwards was a distinct disadvantage. He advocated local rest, sanitary methods, myotics, and salicylates.

Mr. MADDOX described a case in which he had found peritomy and yellow ointment had done the most good. Dry heat he felt to be of the greatest advantage, and for the purpose of applying it he had devised the following method, which was simple, effective, and cheap: A circular piece of flannel was cut large enough to cover the eye well, and on this was sewn some fine wire, which could be attached to an accumulator. A current sufficient to heat the wire well could be passed through it. Dr. HILL GRIFFITH thought that Mr. Sandford took too hopeful a view of these intractable cases. He had not seen any good result in really bad cases from drugs or other treatment, not even from peritomy. Mr. DEVEREUX MARSHALL thought that locally atropine was by far the most useful drug, and he did not at all agree with the use of myotics, except in very rare cases. He thought that, as the ciliary body and the neighboring parts were all more or less affected, the pupil should be kept dilated for fear of getting it blocked. Mr. WRAY said that the main stay in these cases was atropine. The drops should not be used unless preceded by cocaine, and the best method was to use cocaine drops and follow it with ½ % atropine ointment. Mr. WATSON GRIFFIN had treated cases successfully with atropine and cocaine ointment, followed by yellow ointment, with mercury and iodide of potassium internally. Afterward a relapse with deep injection was kept down by adrenalin drops, which, however, were contra-indicated if cyclitis were present. Mr. BISHOP HARMAN described a case which had been treated with adrenalin, which, although it made the eye look better, yet it caused pain and diminished vision, in spite of the fact that it did not increase the tension.

Dr. HERN said he felt bound to add some words of encouragement to the very pessimistic view taken by most of the speakers. The majority of cases certainly get well under treatment, in spite of a few very troublesome ones. It is most important to treat the general constitutional condition underlying the local disease. The two things which he considers the most important are the operation of peritomy and the inunction of mercury. Dr. CLEGG had seen the disease chiefly in women, and more especially at the menstrual period. He has found yellow ointment in strength of from one to six per cent. the most useful.

Dr. GLASCOTT thought that the refraction ought in all cases to be corrected, besides the giving of mercury internally, and the application of atropine locally.

Professor J. WIDMARK then demonstrated **Martin Jansen's siderophone** for the detection of pieces of steel and iron within the eye. It consists of an electro-magnet, to which a telephone is attached. When brought near a piece of iron, an alteration is produced in the electric current, and this produces a sound in the telephone which can easily be heard.

Mr. C. WRAY then read a paper on **civilization and eyesight**, in which he discussed the ways in which myopia was produced, and the relative frequency with which it would be likely to occur.

Professor J. WIDMARK read a paper on the **etiology of myopia.** He said that there were three chief theories to account for the development of myopia: accommodation, convergence, and perception of the retina (imperfect sight). The first theory has been almost given up, but the convergence theory still has a good many adherents. This, however, will not account for all the cases. Corneal opacities and astigmatism seem to exert a considerable influence in its development.

If nebulæ appear in childhood it favors myopia, and this is because the vision is reduced and near vision is rendered more difficult. If they occur in one eye only, it is the sound eye which becomes the myopic one. So, also, if astigmatism be present, it is the least astigmatic eye which becomes chiefly affected; this is due to the extra work done by the sound eye. That convergence can have no great effect is proved by the fact that one eye may develop myopia while the other diverges, and the two eyes are never used together.

He described several cases illustrating this. The theory that it is caused by strain on the optic nerves in convergence cannot be correct, for, if so, the position of the posterior staphyloma would be up and out instead of down and out. It cannot be due to convergence or accommodation, for people with one eye develop it.

The chief reason is because the sight is impaired, and the effort to see small objects causes hyperæmia at the posterior part of the eye, and hence favors the production of myopia. Accumulated products of fatigue may also have an effect and may cause the tissues to yield. If this is so, myopia is to be prevented by helping the retina in any possible way, and thus it is important to correct the vision by glasses which render the sight good.

Colonel E. F. DRAKE-BROCKMAN, I.M.S., said that when in 1869 he was appointed to the Ophthalmic Hospital in Madras,

myopia among the native patients was very small, but as time went on and educational standards became higher the number of myopes considerably increased, and he came to the conclusion that the chief cause in the production of myopia was overwork of the eyes. Dr. HILL GRIFFITH doubted very much if hypermetropia ever became less as years went by, and certainly he had never seen hypermetropia supervene. One author warns us against fully correcting hypermetropes, for fear of hindering the development of the eye. One would have thought that myopia would be more than usually common in India, where for centuries education was greatly in advance of that of Europe. Mr. DOYNE was astonished to hear what Mr. Hill Griffith had said, for he thought it every-day experience to see hypermetropia diminish or pass into myopia. Mr. STORY doubted if myopia had much increased in recent times. In former ages people were nothing like so particular over their eyesight as they are in the present day and took but little notice of the error if not very great. Dr. MCGILLIVRAY had seen some slight cases of hypermetropia pass into myopia. In one case which he had frequently examined under atropine, he had watched a change of four diopters take place. Dr. HERN was of opinion that low degrees of hypermetropia alter but little, but high degrees do certainly tend to get less. He never remembered a case of hypermetropia which was diagnosed as such under atropia ever becoming myopic under the same conditions.

Dr. DAVID MCKEOWN described a case of **congenitally displaced lenses,** which he **needled.** In the left eye the lens became opaque and partially absorbed, so that the patient could see through the clear part of the pupil, while in the other eye the lens became entirely absorbed.

He also described a case of **persistent ulcer of the cornea** in a lady sixty years of age which followed influenza. The ulcer was slow and involved the whole cornea and resisted everything in the way of treatment, even the galvano-cautery. Very slowly it has healed.

FRIDAY, AUGUST IST.

Dr. JAMES TAYLOR opened the discussion on **the rarer forms of optic atrophy.** He excluded from the discussion those cases which followed neuritis, the result of cerebral growth, and the primary atrophy of tabes and general paralysis, which latter was

made very clear by the post-mortem investigations of Dr. Mott. It was also to be recognized that optic atrophy was not an uncommon result from the neuritis occurring in Bright's disease, glaucoma, and following injuries of the optic nerve.

He referred first to the large class of cases associated with *disseminated sclerosis*, which he believed were in most cases the result of neuritis, usually retrobulbar. In some cases a central scotoma was present. The pallor of the disc is different from that in tabic cases, and the vessels are not so small, while he had never known the blindness to be complete, indeed it was often surprising to observe the very fair amount of vision which existed with extreme pallor of the disc. He next referred to toxic cases and the atrophy which frequently accompanies it. He referred to the small quantities of tobacco which may produce it if sugar be present in the urine. He next alluded to cases of optic atrophy not preceded by neuritis occurring as the result of pressure at the chiasma, and to the frequency with which such cases come under observation with one eye already blind, while the other has lost the temporal half of the field. He described other cases, the origin of which was obscure.

Mr. HOLMES SPICER said that in atrophy following disseminated sclerosis the loss of sight was central with little impairment of the field. He regarded these cases as due to an island of sclerosis somewhere in the optic nerve behind the eyeball; he did not think that these cases as a rule progressed to total loss of the fields. He thought that diabetics were especially liable to be affected with amblyopia from tobacco, and a small quantity would produce symptoms in these people. There was also great difficulty in getting truthful histories from smokers. Many of the isolated cases of which Dr. Taylor had spoken belonged probably to the hereditary group. Dr. EMRYS-JONES had published a case of **atrophy associated with the dropping of fluid from the nose in large quantities.** He agreed with Mr. Spicer in considering tobacco an important factor in the production of atrophy. Dr. C. O. HAWTHORNE said that from a clinical point of view optic atrophy was not a fact but an inference. The appearance of the disc alone was insufficient to make a diagnosis by.

Dr. BRONNER thought that many cases ascribed to tobacco were in reality due to other causes, such as commencing central retinal and choroidal changes, which yielded to treatment. It was important in all cases to take the fields for color as well

as for white. Dr. NEWTON PITT and Dr. LODGE discussed the paper and related cases. Mr. J. HERBERT PARSONS called attention to the tendency to put the lesion in all these cases in the optic nerve itself. In some of them it is probably in the retina. The evidence in favor of this in toxic cases is increasing rapidly. Attention was specially directed to the work of Birch-Hirschfeld on the subject. Dr. HILL GRIFFITH said he had seen numerous cases of amblyopia occurring in women who smoke, and in them a much smaller quantity of tobacco was sufficient to produce it than in the case of men. He had no satisfactory explanation to give of those cases of atrophy occurring after profuse hemorrhage.

Remarks were also made by Dr. CLEGG, Mr. HARMAN, and Dr. MCGILLIVRAY.

Dr. SAMUEL LODGE read a paper on a **new vasomotor disturbance of the eye.** This was evidenced by œdema of the eyelids, episcleritis, dilated vessels, and enlarged thyroid. He described numerous cases and showed photographs of the patients, some of whom appeared to be suffering from exophthalmic goitre.

Mr. J. HERBERT PARSONS read a paper and gave a lantern demonstration on **experimental lesions of the retina.** These injuries were produced in the monkey by means of a Graefe knife passed into the vitreous for the purpose of tracing the degeneration in the optic nerves and tracts. Lesions mostly 1 to 3 *mm* were made in various parts of the eye. After a time the eyes were removed and examined. In all cases processes of repair were proceeding and the wound was seen to be healing through the agency of episcleral tissue and choroid. When bleeding had taken place into the vitreous from a large retinal vein, strands of embryonic tissue spread out in a fan-shaped manner (retinitis proliferans). Müller's fibres apparently take no part in the process of repair. Peripheral to the injury the ganglion cells were diminished and centrally there was but little evidence of degeneration of the retina.

In optic nerves and brains treated with *Busch-Marchi* method the following results were obtained:

(1) The degenerated fibres retain their relative position throughout the nerve.

(2) Invariably some degenerated fibres are seen in the nerve of the opposite side, these being probably collateral.

(3) Fibres from the macular region pass from the temporal side of the nerve anteriorly and toward the centre as they pass back.

(4) In all cases there is degeneration in both optic tracts, probably collateral fibres of the injured side.

(5) The fibres spread out as they pass back in the tracts and are distributed over the whole area posteriorly. Most go to the external geniculate body, some to the optic thalamus, and a few to the anterior corpus quadrigeminum.

Dr. BRONNER read notes on forty cases of extraction of the lens in high myopia. He said there was still some uncertainty as to what cases should be operated upon. Most surgeons refuse to operate with less than sixteen degrees of myopia. There are, however, exceptions; for example, when glasses cause pain and give only moderate vision, and in children where the myopia is progressive.

If one eye is myopic with symptoms of amaurosis, while the other is emmetropic, he said he would certainly operate. In children he preferred to operate on both eyes, while in adults only in one as a rule. The risk, though appreciable, is small. Sepsis should not occur, but after operation glaucoma sometimes does supervene and should be carefully watched for. Sometimes thick vitreous opacities occur, and it is doubtful if detachment of the retina is in any way affected by it. Central choroidal changes are no drawback. There is usually a distinct increase in the fields after the operation. The operation he preferred was needling first, followed by evacuation a few days later. Mr. DEVEREUX MARSHALL thought it a very risky thing to operate on one eye when the other was sound, and he could not see what benefit was to be expected by so doing. Mr. HILL GRIFFITH had seen glaucoma come on many days after operation. Mr. HOLMES SPICER had had gratifying results, but he rather thought it more satisfactory to operate on one eye only, as the patients seem to get on better when only one is attempted. Mr. WRAY said he had been discouraged by the strong opinion expressed at the Ophthalmological Society some years ago, when the matter was discussed. In a case of **posterior lenticonus** he had removed the lens with an excellent result. He had seen the tension of these eyes improve after operation.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY IN THE FOURTH QUARTER OF THE YEAR 1901.

(*Concluded.*)

By Prof. ST. BERNHEIMER, at Innsbruck; Dr. O. BRECHT, Prof. R. GREEFF, Prof. C. HORSTMANN, and Dr. R. SCHWEIGGER, in Berlin;

with the assistance of

Dr. G. Abelsdorff, Berlin; Dr. A. Alling, New Haven; Prof. E. Berger, Paris; Dr. Dalén, Stockholm; Dr. J. Herrnheiser, Prague; Prof. Hirschmann, Charcow; Dr. J. Jitta, Amsterdam; Dr. Krahnstöver, Rome; Mr. C. Devereux Marshall, London; Dr. P. von Mittelstädt, Metz; Prof. Da Gama Pinto, Lisbon; and others.

Translated by Dr. Ward A. Holden.

XI.—CONJUNCTIVA.

610. **Franke, E.** Eye affections and hay-fever. *Zeitschr. f. Augenheilk.*, vi., 6, p. 432.

611. **Danvers.** Spring catarrh of the eyes. London: John Bale Sons and Danielson, 1901.

612. **Inouye.** On calomel conjunctivitis. *Ophth. Klinik.*

613. **Osborne, Alfred.** 1. Ophthalmic reports from Egypt. 2. The relation of epidemic conjunctivitis in Egypt to climatic conditions. 3. On the therapy of trachoma and on operations for trichiasis. *Arch. f. Augenheilk.*, xliv., 2, p. 89.

614. **Urbahn.** A contribution to the study of the gonococcus. *Arch. f. Augenheilk.*, xliv., supplementary number, p. 48.

615. **Fürst.** The treatment of ophthalmia neonatorum with largin. *Centralbl. f. Kinderheilk.*, vi., 1901.

616. **Morax** and **Lakah.** Clinical investigations on the etiology of trachoma in Egypt. *Ann. d'ocul.*, cxxvi., p. 353.

617. **Laffargue.** The propagation by flies of granular conjunctivitis in the south of Algeria. *La sem. méd.*, 1901, 27.

618. **Trapesontzian, Catharine.** A study on pterygium, pathogenesis, pathological anatomy. *Arch. d'opht.*, xxi., No. 10, p. 667, and *Rev. méd. de la Suisse romande*, Jan.–Feb., 1901.

619. **Wilder.** On the prevalence of trachoma in the State of Illinois. *Ophth. Record*, Nov., 1901.

620. **Bruns.** An enormous cicatricial cyst. *Ibid.*, Dec., 1901.

According to FRANKE (610), the affections of the conjunctiva and lids accompanying hay-fever never lead to corneal complications, and are distinguished from the ocular accompaniments of simple coryza only by their greater intensity.

INOUYE (612) calls attention to the fact that only finely powdered calomel vapore paratum is suitable for use on the conjunctiva. Only tightly closed bottles and protection from water, light, and organic substances will prevent the formation of clumps or its transformation into bichloride of mercury. If fresh preparations cause conjunctivitis, bichloride was present in them when they came from the factory. After the internal use of iodide of potassium, the author does not use calomel until the excretions, and particularly the urine, are free from iodine. After dusting in the powder, Inouye washes out the conjunctival sac with salt solution.

OSBORNE (613), from his five years' observations in a large policlinic at Alexandria, finds that the increase in eye diseases in the hot months, from April to August or September, follows a curve approximately like that of all the plagues of Egypt: light, heat, dust, the overflowing of the Nile, flies, and the like. Osborne has found that children in the first five years of life are five times more disposed to summer affections of the eye than all the other ages combined. The thick dust of inhabited regions is often the source of infection of purulent keratitis, while the clean dust of the desert has only a mechanical effect.

In the suppurative stage he uses silver or protargal. The glare in corneal affections is relieved by pyoktanin and cocaine. As a curative agent, he applies cyanide of silver to the bulbar conjunctiva near the affected area of cornea. After the irritation has ceased and in the chronic stage he employs massage with ichthyol ointment. In pannus and excessive vascularization he destroys the vessels.

URBAHN (614), from the creamy yellow pus of a conjunctivitis

having all the signs of a gonococcus conjunctivitis, found in pure culture intracellular, biscuit-shaped diplococci, not staining by Gram's method, and having peculiarities as regards cultures. This led him to study the conditions of growth of the gonococcus, when facts were brought to light that were not in accord with the views previously held.

Some of Urbahn's conclusions were as follows: Gonococci can develop upon the usual culture media. There appear to be differences in the cultures which may produce different clinical pictures. The subvarieties previously described seem to stand near the meningococci. Instead of pseudo-gonococcus the term gonococcus should serve as a general designation.

The clinical investigations of MORAX and LAKAH (616) in Alexandria showed that infants were infected with trachoma by their nurses, and older children by their school companions. Climatic conditions and race had, in their opinion, no influence upon the development of trachoma. BERGER.

The case of pterygium of which CATHARINE TRAPESONTZIAN (618) has given a detailed description was in the left eye of a man of twenty-three, whose right eye, previously injured, exhibited a symblepharon and a fleshy pterygium covering the entire cornea. In the left eye, that had not been injured, the pterygium extended from the lower-outer portion of the conjunctiva upward and then downward over the upper margin of the cornea, so that a great portion of the cornea was overlapped by a free fold of the pterygium. The first incision was followed by a return, and after further fruitless operations a symblepharon developed upward which could not be relieved.

The epithelium of the pterygium corresponded with that of the conjunctiva, had undergone mucoid degeneration at various points, and contained many gland-like cavities. At other points there were remains of actual tubular glands. These were doubtless portions of the lachrymal glands or their excretory ducts, which, like muscle fibres from the superior rectus, had been displaced to this point.

At the corneal margin, the stroma of the pterygium was made up chiefly of corneal tissue whose superficial layers ran irregularly and were infiltrated with leucocytes.

As to the cause of the repeated recurrences, the authoress assumes a special disposition, "pterygiosis," and believes that the winking of the lids greatly favored the downward growth of the

pterygium. This observation shows that Fuchs's view, according to which a pinguecula always takes part in the development of a pterygium, is not correct. v. MITTELSTÄDT.

BRUNS (620) describes a cystoid cicatrix, after extraction, 9 *mm* in its longest diameter and elevated 5 *mm* from the sclerotic. The outer wall consisted chiefly of condensed conjunctival tissue covered by a small amount of loose conjunctiva. The cyst was lined with endothelial or epithelial cells which may have been derived from Descemet's membrane or from the cells of the anterior lens epithelium. ALLING.

XII.—CORNEA.

621. **Katz.** Eserine in corneal diseases. *Wjest. ophth.*, Nov.–Dec., 1901.

622. **v. Ammon.** A contribution to the subject of specific interstitial punctate keratitis. *Arch. f. Augenheilk.*, xliv., p. 234.

623. **Hertel.** On purulent keratitis in man. *Graefe's Archiv*, liii., p. 316.

624. **Fuchs.** Ulcus atheromatosum corneæ (sequestrating cicatricial keratitis). *Graefe's Archiv*, liii., p. 61.

625. **Pansier.** Tractatus de hypopio auctore Joanne-Claudio Pancin. Paris, Maloine, 1901.

626. **Osborne, A.** Tattooing of the cornea followed by secondary glaucoma in the other eye. *Arch. f. Augenheilk.*, xliv., 2, p. 107.

627. **Gayet.** Staphyloma of the cornea cured by the temporary reversal of the cornea or Gayet's operation. *Bull. de la soc. de chirurg. de Lyon*, iv., 1, p. 15, 1901.

628. **Dor, L.** Temporary reversal of the cornea. *Ibid.*, p. 17.

629. **Knapp, Paul.** On a case of pulsating ectasia of the cornea. *Zeitschr. f. Augenheilk.*, vi., 6, p. 474.

630. **Hochheim.** Two cases of melanotic epibulbar sarcoma with marked pigmentation of the corneal epithelium. *Ibid.*, vi., 5, p. 389.

631. **Osborne, A.** Extraction of a splinter of glass from the anterior chamber. *Arch. f. Augenheilk.*, xliv., p. 115.

632. **Wilder.** Corneal lesions in acquired syphilis. *Journ. Amer. Med. Assoc.*, Dec. 21, 1901.

633. **Meierhof, E. L.** Frost-bite of the cornea due to excessive application of cold. *N. Y. Med. Journ.*, Nov. 30, 1901.

634. **Dodd, P.** Hyaline degeneration of the cornea, with report of cases. *Amer. Journ. of Ophth.*, Oct., 1901.

In marginal infiltrations and confluent marginal ulcers of the cornea KATZ (621) recommends eserine instead of atropine. The severe pain is relieved at once and the ulcers heal quickly. HIRSCHMANN.

v. AMMON (622) describes a rare form of disease of the cornea

which he, like others before him, had observed in the syphilitic. Without further gross changes in the eye, small gray spots appear in the substantia propria of the cornea, which disturb vision but slightly and disappear in two weeks. While others have regarded these opacities as groups of gummous cells, v. Ammon calls attention to the fact that tertiary affections run a slow course. He believes rather that here, as in parenchymatous keratitis from acquired syphilis, exceptionably the lymph spaces of the cornea may be injured so that the endothelial cells are affected and the lymph coagulated, appearing as delicate opacities.

HERTEL (623) presents a number of interesting details from his numerous anatomical investigations of corneal ulcers. Clinically the cases were usually serpent ulcer with hypopyon phlyctenulæ that have become purulent or are in a cicatricial state, catarrhal marginal ulcers, blennorrhoic ulcers, necrosis from drying accompanied with ulcers and hypopyon. He discusses the presence of bacteria, early erosion of Descemet's membrane, the source of hypopyon, etc.

In the ulcus atheromatosum corneæ, or sequestrating cicatricial keratitis, described clinically and pathologically by FUCHS (624), there is an old corneal scar with an adherent iris, in which, in consequence of degeneration, hyaline or calcareous deposits are laid down. The overlying epithelium varies in nutrition and undergoes changes which lead to its being readily cast off and allowing the entrance of micro-organisms. The infection extends deep and often forms a sequestrum of the calcified part which is cast off. Perforation sometimes occurs, and the adherence of the iris facilitates the danger of panophthalmitis.

OSBORNE (626) tattooed both eyes of a patient with adherent leucomas. When the process was repeated in the blind eye, the other, which still had vision, was attacked by glaucoma.

DOR (628) reported a case of cicatricial staphyloma of the cornea in which Gayet's operation proved very successful. With a Graefe knife an incision was made, including the lower two-thirds of the periphery of the cornea, and the corneal flap was turned upward. Examination of the iris now showed that the pupillary margin was free for $\frac{3}{4}$ of its extent, while $\frac{1}{4}$ was adherent to a corneal scar. The uveal portion of the iris was here adherent to the anterior capsule, so that a cystic cavity existed between the two layers of the iris. With scissors the iris was separated

from the cornea, the posterior surface of the cornea freed from the adherent remains of the iris by curetting, the flap replaced, and both eyes bandaged for a week. The staphyloma disappeared, while vision rose to $\frac{1}{10}$. BERGER.

In a young man with hypertrophy of the heart and increased heart action, KNAPP (629) found a myopic astigmatism of 10. D without quite regular relations of the axes. Vertical lines appeared to the patient rhythmically broader and thinner, corresponding to the heart beat. Fingers held vertical were counted without a glass at 1 *m* and horizontal at 6 *m*. The ophthalmometer showed a high degree of astigmatism with a rhythmical variation in the more greatly curved horizontal meridian and a slight variation in the vertical. An attempt was made, temporarily successful, by the cicatrization of a lateral and a medial incision with a lance to equalize the curvature in the two meridians. Finally, however, the curvature of the vertical meridian became the more excessive.

In OSBORNE'S (631) case a splinter of glass had been driven into the anterior chamber by an explosion a month and a half before. The eye continued irritable under alternate treatment with atropine and eserine. Splinters of glass are not only hard to see, particularly during the operation, but are also hard to grasp. The section should be made near the corneal margin. In Osborne's case there was a small prolapse of the iris and the splinter emerged from the wound.

WILDER (632) presents three cases of interstitial keratitis undoubtedly due to acquired syphilis. The disease is milder and shorter in its course than the inherited form, and may assume either the diffuse or the punctate variety. Its most characteristic form is that in which there is a large dense infiltration with little or no vascularization and no tendency to ulceration and no iritic complications. ALLING.

MEIERHOF (633) observed two cases of clouding of the cornea which he considers was due to the constant application of ice pledgets in infants with only *slight conjunctival* affections.

ALLING.

DODD'S (634) cases are as follows: 1. After removal of a pterygium, two thick white masses appeared on about one fifth of the cornea. The rest of the cornea was opaque and vascular. The

masses were easily removed from Bowman's membrane. Specimen lost. 2. Several translucent, whitish elevated spots were present in the cornea following repeated attacks of inflammation. These could be, for the most part, separated from Bowman's membrane. The condition seemed to be a hyaline infiltration underneath hypertrophied epithelium at the site of old ulcerations. 3. Whole thickness of the cornea more or less filled with fine whitish dots. The more superficial opacities were scraped off leaving depressions. All these deposits are believed to be hyaline in nature, in some cases showing calcareous degeneration.

ALLING.

Sections XIII.–XVIII. Reviewed by DR. O. BRECHT, Berlin.

XIII.—LENS.

635. **Klein, S.** On diabetic cataract. *Wiener klin. Wochenschr.*, xiv. 45, p. 1097.

636. **Pichler.** The development of diabetic cataract. *Prag. med. Wochenschr.*, 1901, Nos. 19, 20.

637. **Hoor, Carl.** On complications in cataract extractions. *Zeitschr. f. Augenheilk.*, iv., p. 19.

638. **Lezenius.** A case of naphthalin cataract. *Wratsch*, 1901, No. 45.

639. **Trombetta.** The movement of the eyes in the non-seeing. *Ann. di Ottalm.*, xxx., 1.

640. **Various Authors** on cataract. *Indian Medical Gazette*, June, 1901.

KLEIN (635) believes that posterior polar or cortical cataract appearing bilaterally at about the same time without the presence of retinitis pigmentosa or choroidal affections is characteristic of diabetes mellitus.

PICHLER (636) relates observations made with the Zeiss binocular corneal microscope in Professor Czermak's clinic on incipient diabetic cataract.

The first sign of opacity is the formation of droplets; later globular bodies of peculiar appearance (Morgagni's globules or the swollen ends of lens fibres) appear beneath the anterior capsule of the lens. He presents further the results of microscopic examination of a diabetic cataract, and has in mind a later more detailed publication. He concludes that diabetic cataract begins with the absorption of liquid due to osmotic changes.

HOOR (637) observed a case of collapse of the eyeball without prolapse of vitreous after puncture and counter-puncture for

cataract extraction, which led him to substitute discission in the forty-year-old patient with good results. The patient had no knowledge of a previous irido-cyclitis.

The other case reported was one of attempted extraction with excessive prolapse of the vitreous, the lens escaping from the spoon into the vitreous. The eye remained greatly inflamed for four weeks, but became quiet after extraction with the loop. Hoor offers this observation in opposition to the claims of the many who now favor reclination of the lens.

Disturbances of vision were noticed by a pharmacist aged thirty-six, about twelve hours after the ingestion of 5. *g* of unpurified naphthalin in 200 *g* of ol. ricini. A year later LEZENIUS (638) found in both eyes a perinuclear opacity of the lens in a pronounced form of zonular cataract. Vision was reduced to counting of fingers at 1 *m*. HIRSCHMANN.

In a child operated on for congenital cataract TROMBETTA (639) found some days after removal of the bandage that the movements of the eyes were irregular and atypical. In scarcely any position was there coördination. There was nystagmus and complete absence of convergence. KRAHNSTÖVER.

(640) The relative number of cases of senile cataract is much greater in India than in England. Senile symptoms appear in the natives about ten years earlier than in the English. MAYNARD found that of 212 cases of cataract 141 persons were meat eaters, and 71 vegetarians, and the average age was 51.7 years. NEVE believed the intense light to be the cause of cataract, the natives on the plains being more exposed. He believes that his view is supported by the fact that only 30 % of the cases occurred in women, who are less exposed to sunlight than the men. For the same reason, in Cashmere the Mohammedans suffer much more frequently from cataract than the Hindoos.

XIV.—IRIS.

641. **Greeff.** Tuberculosis of the eye. III. Tuberculosis of the iris. *Fortschr. d. Medicin*, 1901, No. 31.

642. **Hoppe.** Iritis in a new-born infant. *Arch. f. Augenheilk.*, xliv., p. 225.

643. **Terrien.** A study of the cysts of the iris. *Arch. d'opht.*, xxi., 1901, p. 651.

644. **Stieren.** Gumma of the ciliary body. *Penn. Med. Journ.*, Nov., 1901.

645. **Hubbell.** Total retroflexion of the iris. *Journ. Amer. Med. Assoc.*, Nov. 16, 1901.

HOPPE (642) saw in a new-born infant a unilateral iritis associated with hyperæmia, and a vascular network springing from the anterior surface of the iris. Recovery. No other explanation for this unusual condition presenting, the author assumes an intrapartum injury.

By a partial excision of the iris TERRIEN (643) removed a small cyst, which had developed in the upper-outer segment of the iris stroma in a man of nineteen without a preceding injury. The anterior wall was thin, and the posterior thick. The walls were lined with a single layer of endothelium, and the contents were liquid. The author believes with Schmidt-Rimpler that this variety of cyst arises from closure of a crypt of the iris.

V. MITTELSTÄDT.

HUBBELL (645) relates the case of a man, fifty-five, who received a violent concussion, followed by aphakia and total disappearance of the iris. The lens was either dislocated to a point where it was invisible or had been absorbed. The iris was thrown entirely out of view by being tilted back against the ciliary body. Vision became $\frac{5}{12}$. ALLING.

XV.—CHOROID.

646. **Senn, A.** Rudimentary choroido-retinitis due to hereditary syphilis. *Arch. f. Augenheilk.*, xliv., Ergänzungsheft, p. 147.

647. **Spengler.** An unusual congenital chorio-retinal change. *Zeitschr. f. Augenheilk.*, vi., p. 285.

648. **Meyerhof, Max.** On unusual manners of extension and results of uveal sarcoma. *Klin. Monatsbl. f. Augenheilk.*, xxxix., p. 913.

649. **Goldzieher.** Two cases of crypto-sarcoma of the choroid. *Centralbl. f. prakt. Augenheilk.*, xxv., p. 321.

SENN (646) describes sixty-six cases of rudimentary chorioretinitis, due to hereditary syphilis. The diagnosis is difficult, and depends principally upon the ophthalmoscopic picture. There is a triad of symptoms: 1. A lack of pigment in the retina which may be peripheric, or circum-papillary, or of sector form; 2. a dirty-gray or bluish-gray mottled appearance of the choroidal stroma; 3. scattered small choroidal foci, mostly pigmented, and rarely yellow. Besides these appearances there may be excessive pigmentation of the equatorial parts, thin or obliterated choroidal vessels, and pallor of the disc of all degrees. Etiologically 66 %

could be shown to have inherited syphilis. Forty-one patients were subjected to antisyphilitic treatment, and an average improvement of vision of 0.54 was obtained, which, as a rule, was permanent. Most of the patients were in the second decade of life, some in the first, and a few were older.

SPENGLER (647) found retinitis punctata albescens in four children of one family. Central vision was slightly reduced with intact fields, normal color perception, slight signs of hemeralopia, and in the fundus numerous small round white spots, apparently in the pigment epithelium or close behind it, and larger yellow stripes and pale yellow patches between the choroidal vessels. The two grandmothers of the patients were sisters, and the author believes that this consanguinity accounted for the affection.

MEYERHOF (648) describes a flat sarcoma of the choroid, a necrotic melanosarcoma of the choroid in an eye secondarily atrophic, and a flat spindle-celled sarcoma, poor in pigment, springing from the ciliary body and extending to the iris and choroid.

GOLDZIEHER (649) reports on two cases of sarcoma of the choroid which at first could not be diagnosed, but concealed themselves under such a strange complexus of symptoms that only an anatomical examination revealed their presence.

In the first case a spindle-celled sarcoma of the choroid was found involving the entire fundus. Five months before the nasal half of the field of vision became amblyopic and the temporal amaurotic. With the ophthalmoscope nothing could be seen.

In the second case there was a sarcoma as large as a bean in an eye greatly inflamed, with sympathetic inflammation of the other eye. It is not clear that the sympathetic inflammation in the second eye was due to the tumor.

XVI.—VITREOUS.

650. **Leitner.** Two unusual cases of injury of the eye. Splinters of copper in the vitreous. *Orvosi Hetilap.*, 1901, No. 39.

XVII.—GLAUCOMA.

651. **Haab.** Glaucoma and its treatment. *Sammlung. zwangl. Abhand. a. d. Gebiete d. Augenheilk.*, vi., 6–7.

652. **Weill, G.** An attack of glaucoma following luxation of a subluxated lens after the use of atropine. *Zeitschr. f. Augenheilk.*, vi., p. 306.

653. **Troncoso.** Pathogenesis of glaucoma. Clinical and experimental researches. *Ann. d'ocul.*, cxxvi., Dec., 1901.

654. **Grut.** Remarks on the treatment of glaucoma. Seventh session of the Danish Ophthalmological Society. 1901, p. 1185.

655. **Roscher.** A case of glaucomatous excavation of the lamina cribrosa without excavation of the optic nerve. *Klin. Monatsbl. f. Augenheilk.*, xxxix., p. 947.

656. **Black, M.** Resection of superior and middle cervical ganglia of the sympathetic for subacute glaucoma. Presentation of patient. *Ophth. Record*, Oct., 1901.

657. **Suker, G. F.** The value of excision of the superior cervical sympathetic ganglion. *Journ. Amer. Med. Assoc.*, Dec. 14, 1901.

HAAB'S (651) monograph on glaucoma and its treatment presents in a clear, brief, comprehensive manner the present status of our knowledge in regard to this puzzling disease. Resection of the superior cervical ganglion is not discussed. In the way of treatment Haab places iridectomy first, and discusses anterior sclerotomy also, particularly as being useful in certain cases of secondary glaucoma, in infantile and hemorrhagic glaucoma, and in many cases of advanced simple glaucoma. His statistics show good results.

WEILL (652) adds to the report of his case the warning to avoid the use of mydriatics when the lens is luxated downward, because the loss of support by the iris allows the lens of its own weight to tilt forward into the anterior chamber and bring about glaucoma.

TRONCOSO (653) calls attention to the fact that previously the quantitative changes in the intraocular liquids in glaucoma have been studied, but not the qualitative. Chemical examination of the aqueous humor in nineteen glaucomatous eyes by Villasener and Loranzo in Mexico has shown that this liquid is richer in albuminoid substances than that in the normal eye. He states that in cases of serous iritis, irido-choroiditis, and senile cataract the aqueous humor was found to be albuminous; in the same way after puncture of the anterior chamber in glaucoma the aqueous humor that collected again was found to be very albuminous. This albuminous condition he compares in its pathological aspects with the dialbuminuria of Landangy in kidney diseases and refers the former to disease of the vessels (arterio-sclerosis) or vasomotor changes in glaucoma.

In consequence of the high percentage of albumen in the aqueous humor, there is a disturbance of exosmosis in the anterior

chamber and thus a slowing of the excretion of the intraocular lymph, while simultaneously the vitreous undergoes changes in volume and histological structure, both of which lead to the increased tension of glaucoma. Troncoso strives to fit his theory to the different forms of glaucoma and to an explanation of the action of iridectomy and the miotics. Experiments on rabbits showed that the injections of vitreous into the anterior chamber caused more persistent hypertony than injections of salt solution, which he regards as a further proof of his theory.

GRUT (654) criticises various points in de Wecker's paper "Valeur de l'iridectomie dans le glaucome." De Wecker counts as glaucoma simplex only cases in which there has been no cloudiness of vision or perception of haloes. Grut claims that this distinction is impossible, since these symptoms, although often late and at long intervals, appear in every case.

In opposition to de Wecker and Schweigger, Grut maintains that a typical glaucomatous excavation of the disc exists.

There are, of course, excavations of which one cannot say with certainty whether or not they are pressure excavations, but "a deep excavation extending to the margin of the disc, with sharp bending of the vessels and with displacement of the central vessels toward the wall of the excavation, is always a pressure excavation."

Grut agrees with de Wecker that there is always abnormal tension in glaucoma, although the increased tension may not be detected by palpation. In this sense one may speak of glaucoma simplex with and without increased tension. When the increased tension cannot be detected, one must draw his conclusions from other symptoms. The symptoms relied upon by de Wecker—nasal contraction of the field and the relation between the field for white and that for colors—have little importance. Of greater value are the defects in the field discovered by Bjerrum and the cloudiness of vision and the perception of haloes. De Wecker warmly urges early operation in glaucoma simplex. He states that not rarely has he seen vision improve and field grow larger after operation, and even goes so far as to say that an early operation in cases of glaucoma simplex gives as good and as permanent results as in cases of inflammatory glaucoma. This opinion Grut calls "over-sanguine."

According to Grut, it has not once been shown that an operation has a restraining influence upon the course of glaucoma simplex.

Nor are there reliable statistics to show what is the spontaneous course of this always very tedious affection.

ROSCHER'S (655) preparation shows a deep total excavation of the lamina cribrosa, which is filled up with the œdematous infiltrated tissues of the nerve-head. The patient had ten years before apparently an interstitial keratitis with secondary glaucoma and the fresh inflammation, despite the atrophy of the nerve, had led to an excessive swelling of the remaining tissues of the nerve.

The case of a man, thirty-five, reported by BLACK (656), showed repeated attacks of subacute glaucoma, during which the vision in the left eye was reduced to fingers at one foot, with tension + 2. Eserine entirely relieved the attacks. After resection of the superior and middle cervical ganglia the vision and tension returned to normal. There had been no return of the glaucoma after eight months. The author does not believe that beneficial results can be expected from sympathectomy unless the tension is reduced by eserine. ALLING.

SUKER (657) was able to collect twelve cases of sympathectomy in America, four being his own. He concludes that the operation is justifiable where iridectomy and sclerotomy have failed to relieve the chronic forms of glaucoma, but is not indicated in the acute forms. ALLING.

XVIII.—SYMPATHETIC OPHTHALMIA.

658. **Grunert.** Pathological and bacteriological report of a further case of sympathetic inflammation. *Klin. Monatsbl. f. Augenheilk.*, xxxix., p. 833.

GRUNERT'S (658) findings in this case accord with those in another previously described in these pages. There were marked inflammatory changes in the iris, ciliary body, and head of the optic nerve; less marked changes in the choroid, retina, and optic nerve, the nerve changes becoming less pronounced as one went farther from the ball. No micro-organisms were found.

Sections XIX.–XXII. Reviewed by DR. v. HASLBERG, Berlin.

XIX.—RETINA AND FUNCTIONAL DISTURBANCES.

659. **Dawydow.** A case of early general arterial sclerosis with sclerosis of many organs, complicated with detachment of the retina. *Sitzungsprotocolle der k. Kaukasischen medicinischen Gesellschaft*, 1901, No. 14.

660. **Trantas.** The treatment of essential hemeralopia by the ingestion of boiled or fried liver. *Arch. d'opht.*, xxi., 11, p. 723.

661. **Jervey, J. W.** Chorio-retinitis striata. *Ophth Record*, Oct., 1901.

662. **Friedenwald.** The newer pathology of the retina. *Journ. Amer. Med. Assoc.*, Nov. 30, 1901.

663. **Moulton.** A case of blindness from drinking bay rum, with reported cases due to methyl alcohol and to essence of Jamaica ginger, etc. *Ibid.*

664. **Reynolds.** Atrophy of the retina. *Ibid.*

665. **Veasey.** Complete recovery from double neuro-retinitis. *Ibid.*, Dec. 14, 1901.

666. **Würdemann.** A case of hysterical blindness and deafness. *Ophth. Record*, Oct., 1901.

667. **Würdemann.** The treatment of recent embolism of the retinal arteries by deep massage, with report of two cases cured by the method. *Annals of Ophth.*, Oct., 1901.

Dawydow's (659) patient, aged twenty-eight, suffered from pronounced general arterio-sclerosis, cirrhosis of the kidneys and other organs, frequent vomiting, hemorrhages from the lungs, and for three months bilateral detachment of the retina, which Dawydow attributed to shrinking of the vitreous in consequence of arterial sclerosis. HIRSCHMANN.

Trantas (660) recommends the eating of boiled or fried liver in cases of hemeralopia. In the course of a month he observed twenty-four cases associated with xerosis conjunctivæ among the inmates of an orphan asylum. All were cured in a few days when liver was given them three times a day. v. MITTELSTÄDT.

Jervey (661) reports a case which showed glistening white bands radiating from the area surrounding the disc. These stripes, the larger ones with edges sharply defined, vary in width from almost thread-like to three or four times the width of a large retinal vessel. Some of the bands are bordered with choroidal pigment deposits showing the involvement of that structure. About one third of the retina was detached inferiorly. Jervey believes that the appearances could not have been produced by a readjusted retinal detachment or by absorption of retinal hemorrhage. Changes in nutrition seem to be the more probable cause. ALLING.

Friedenwald (662), after reviewing our present knowledge of the pathology of the retina, especially with reference to changes produced by toxic agents, describes his experiments with four rabbits to which had been given, over a period of four months,

small quantities of pure methyl alcohol, absolute ethyl alcohol, commercial methyl alcohol, and Jamaica ginger made of ninety-five per cent. methyl alcohol. All showed similar effects. The ganglion cells were markedly degenerated and the inner and outer nuclear layers were also affected. Many of the ganglion cells showed great shrinkage and atrophy. Such results of chronic alcohol poisoning are important as applied to the same condition in man. ALLING.

REYNOLDS (664) relates two cases of progressive blindness accompanied by contraction of the field and central scotoma with normal discs and attenuated retinal vessels. He regards these as cases of primary retinal atrophy. ALLING.

VEASEY (665) relates the case of a woman who suffered from hematuria with symptoms of nephritis. The edges of both discs were veiled, the veins full and slightly tortuous. There were a few feathery hemorrhages, and the macula showed the typical appearance of nephritic lesions in the form of stellate figures. Under general treatment the urine cleared and the patient recovered her health. The condition of the eyes returned to the normal in every respect. ALLING.

WÜRDEMANN (666) relates the case of a woman who received a nervous shock from being struck by an uncharged electric wire. The vision was reduced and fields contracted in both eyes, and the right ear showed psychic deafness. ALLING.

WÜRDEMANN (667) reports a case of embolism of the central artery of the retina which came under treatment after six days. Deep massage, pilocarpine, and iodide of potash were used. From total blindness the vision improved to normal within one month. Another case of embolism of the superior branch of the retinal artery came under treatment after three weeks with vision reduced to counting fingers. After two weeks of treatment the vision was 6/LX. The good results are attributed to massage. ALLING.

XX.—OPTIC NERVE.

668. **Noischewsky.** Aneurysm of the left internal carotid at the chiasm. *Wjest. Ophth.*, 1901, Nov.–Dec.

669. **Liebrecht.** Optic nerve and arterio-sclerosis. *Arch. f. Augenheilk.*, xliv., 3, p. 193.

670. **Emanuel.** On the relations of optic-nerve tumors to elephantiasis

neuromatodes and on glioma of the optic nerve. *Arch. f. Ophth.*, liii., 1, p. 129.

671. **Barrett, J. D.** Optic atrophy following hæmatemesis. *Annals of Ophth.*, Oct., 1901.

In the case reported by NOISCHEWSKY (668) both papillæ were œdematous, vision reduced in each eye, contraction of the field with lateral re-entrant angles, absence of smell. With the stethoscope on the head, and particularly the left temple, a systolic bruit was heard. Ligation of the left common carotid relieved the symptoms and improved the vision. HIRSCHMANN.

LIEBRECHT (669), after a critical *résumé* of the literature, describes seven cases of lesion of the optic nerve from aneurysm of the carotid and arterio-sclerosis of the ophthalmic artery. The optic nerve was sometimes flattened, sometimes constricted, in two cases divided or entirely separated. Accurate observations on the living do not exist, yet in cases of general optic-nerve atrophy, with arterial sclerosis and without tabes or syphilis, this possible etiology is to be borne in mind. The nerves are affected behind the optic foramen, in the fibrous canal half-way between the chiasm and the optic foramen.

EMANUEL (670) presents illustrations of a tumor of the optic nerve previously examined microscopically by Sattler, and critically examines the literature. He believes that the tumors previously described as glioma, gliosarcoma, and fibroma belong in the category of elephantiasis neuromatodes—multiple new formations in the peripheral nerve trunks and the central nervous system. Pure gliomas of the optic nerve must be very rare, although in most cases the glia is to some extent involved. Tumors developing within the pial sheath may be designated as pure gliomas.

BARRETT (671) has collected 142 published cases of blindness following hemorrhage of various origin. The ophthalmoscopic appearances were usually more or less disturbance of the disc with loss of sharpness of outline and some œdema of the retina in the vicinity. The end, in the serious cases, is always the same—very rapid atrophy, narrow arteries, and sometimes white spots in the retina. The rapid onset of the atrophy, and the picking out of a portion of the nerve in some cases, does not look like ordinary neuritis. Altered blood, disturbed nutrition, spasm and possibly thrombosis of the arteries or veins, seem to be the factors

in causation. The following case is presented: A man, fifty-two, had an attack of vomiting accompanied by the loss of about a pint and a half of blood. Seven days later he complained of a cloud, and the following day was totally blind in both eyes. The pupils were equal and immovable. The margin of the disc was lost in a milky haze which extended into the surrounding retina. No change in the vessels could be detected. After eight days the disc showed pallor, which increased to complete atrophy within a month of the attack of vomiting. ALLING.

XXI.—INJURIES, FOREIGN BODIES, PARASITES.

672. **Franke.** On metallic foreign bodies in the eye. *Centralbl. f. prakt. Augenheilk.*, Dec., 1901,

673. **Quint.** A rare injury of the eye. *Ibid.*, Oct., 1901.

674. **Goldzieher.** Contributions to the pathology of shot wounds of the orbit. *Zeitschr. f. Augenheilk.*, vi., p. 277.

675. **Schirmer.** On the diagnosis, prognosis, and therapy of perforating infected injuries of the eye. *Arch. f. Ophth.*, liii., 1, p. 1.

676. **Lederer.** On traumatic enophthalmus and its pathogenesis. *Arch. f. Ophth.*, liii., 2, p. 241.

677. **Bourgeois.** Ocular injuries from protecting glasses. *Rec. d'opht.*, xxiii., p. 591.

FRANKE (672) removed a splinter of copper from the surface of the iris where it had lain $4\frac{1}{2}$ months. V = $\frac{7}{24}$. A second patient had a splinter of iron in his lens, and this was removed with magnetized forceps.

QUINT (673) saw a very remarkable case of ocular injury. A nail in a board had entered the orbit at its margin, striking the eyeball from behind and penetrating it. Some of the eyebrows had been carried into the eye. Ophthalmoscopically: rupture of the sclera and choroid, through which one could see behind the eye. In the vitreous two hairs were to be seen. There was no other external injury, and no operative treatment was undertaken. V = $\frac{5}{10}$. Up to the present time the course has been favorable.

LEDERER (676) reports on two cases of traumatic enophthalmus and collects fifty-two cases from the literature.

BOURGEOIS (677) reports two cases of severe injury of the eye from the breaking of protecting glasses worn by laborers. In one case a bit of the spectacle frame entered the sclera. The eye recovered with V = $\frac{1}{3}$. In a second case a piece of glass *2 mm* thick perforated the cornea without injuring the iris or lens.

Vision was reduced to ¼. A valuable sort of protecting glass is that shown by Snellen in the Paris International Congress of 1900. Several worthless protecting glasses were to be seen in the exhibition.

XXII.—OCULAR AFFECTIONS IN GENERAL DISEASES.

678. **Babinsky.** Pupillary affections in aortic aneurysms. *Bull. de la soc. méd. de Paris*, Nov. 8, 1901.

679. **Ballmelle.** Dilatation of the pupils in aneurysms and affections of the heart. *Thèse de Toulouse*, 1901.

680. **Strzeminski.** A case of hereditary syphilitic eye disease in the third generation. *Arch. f. Augenheilk.*, liii., p. 360.

681. **Garafalo.** On gouty affections of the eye. *Wiener med. Presse*, 1901, No. 36.

682. **Csapodi.** Papillo-retinitis in malaria. *Ungar. med. Presse*, 1901, No. 4.

683. **Roux.** Lesions of the sympathetic system in tabes and their relation to disturbances of visceral sensibility. Paris, Carré et Hand, 1900.

684. **Jack, E. E.** The pupil in general disease. *Boston Med. and Surg. Jour.*, Sept. 26, 1901.

685. **Risley.** Some of the ocular affections of childhood. *Penn. Med. Jour.*, Nov., 1901.

686. **Thomas, H.** Chorea with embolism of the central artery of the retina. *Bull. Johns Hopkins Hosp.*, Oct., 1901.

Babinski (678) reports two cases of inequality of the pupils in cases of aortic aneurysm which were not to be explained by the generally supposed compression of the sympathetic. Both patients, who had syphilis, presented Argyll-Robertson pupils, and Babinski concluded that the pupillary symptoms and the aneurysm were independent of each other and caused by syphilis.

Strzeminski (680) describes a case of diffuse parenchymatous keratitis and chorio-retinitis with pigment deposits in both eyes of a boy of twelve, whose father suffered from syphilis inherited from his father, and had a parenchymatous keratitis in childhood and still presented an areolar choroiditis. The mother of the patient and his paternal grandmother are healthy. Primary infection of the boy and of his father was excluded. Hirschmann.

Garafalo (681) describes a case of exophthalmus in pellagra with immobility of the lids, grayish-red discoloration of the discs, and marked tortuousness of the vessels. Recovery followed the use of Fowler's solution.

Csapodi (682) presented a man of thirty-six who had acquired

malaria in the south. The right eye was normal, but the left presented marked changes. The disc was swollen with extravasations of blood below, and the surrounding retina was swollen and discolored. Syphilis was excluded, and no change was found in the orbit; there was also no kidney trouble, and the changes in the eye were attributed to the malaria. HERRNHEISER.

In Dejerine's laboratory ROUX (683) examined the sympathetic system in tabic patients and often found pathological changes. Particularly were changes found in the cervical sympathetic, whose medullated fibres were found to be reduced one half in some cases. Roux does not believe, however, that the pupillary disturbances in tabes are brought about in this way. In one case of Argyll-Robertson pupils he found the cervical sympathetic normal. BERGER.

THOMAS (686) has found records of six cases in which embolism of the retinal artery has been observed in connection with an attack of chorea. He reports the case of a girl who had showed choreic movements of the right arm and leg and of the face for six weeks. At the beginning of the attack she became suddenly blind in the left eye. The ophthalmoscopic picture was that of embolism of the central artery. He discusses the probable connection between embolism in the brain and chorea, but believes the lesion in the eye secondary to endocarditis. ALLING.

BOOK NOTICES.

XV.—**Diseases of the Eye.** A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. De Schweinitz, A.M., M.D., Prof. Ophthalmology in the University of Pennsylvania, Ophthalmic Surgeon to the Philadelphia Hospital, etc. Fourth edition, thoroughly revised. Philadelphia and London, W. B. Saunders & Co., 1902. Price, $5.00.

This fourth edition of Dr. De Schweinitz's excellent text-book is truly revised, modern literature being carefully considered and extensively used. The 280 illustrations in the text are extraordinarily distinct and neat, and the chromo-lithographic plates by Margaretta Washington compare favorably in delicacy of touch, truthfulness of nature, and correctness of detail with the best ophthalmoscopic pictures ever produced. The typography of the work leaves nothing to be desired; the paper is somewhat glossy, yet not more so than in the great majority of modern text-books and magazines. The presentation of the text deserves all praise: it is clear, precise, and closely adapted to the subject; the style is easy and graceful, here and there flowery.

The contents of this volume of 773 pages, with a detailed index, constitute one of the best medium-sized text-books of modern ophthalmology. The author is thoroughly practical, and at the same time strictly scientific, with a commendable tendency always to use in his expositions the simplest and most comprehensive expressions, not handicap with mathematical formulas and foreign words a subject that could just as well or better be described in plain English.

The optical part, prepared for the first edition in collaboration with Dr. James Wallace, 191 pages, is classical, as might have been expected from a leading Philadelphia ophthalmologist. It has

the immense advantage over almost all monographs on theoretical or practical ophthalmological optics of omitting nothing that is of practical use, and describing every subject clearly and briefly, without obfuscating it by unnecessary subtleties. We may quote as an example the chapter on astigmatism, which is sufficient for all practical requirements and intelligible in all its details for an average intellect.

The pathological and clinical part occupies 460 pages. It begins with the eyelids, 30 pages, and the diseases of the conjunctiva, 56 pages. The description of this highly important part is very instructive, with strict rules of treatment. Keratitis, fully as important as conjunctivitis, receives the same careful consideration, though not the same space and minute details recently introduced into the larger text-books—for instance, E. Fuchs's. The different types of inflammation based on the embryological derivation of the strata of the cornea, the anterior (conjunctival), intermediate (scleral), and posterior (uveal), might have been dwelt upon as shedding a good deal of light on the diversified appearance and often very tedious and unlucky course of these processes.

The diseases of the uveal tract, including sympathetic ophthalmia and glaucoma, are very well described.

The lens, vitreous, retina, and optic nerve are thoroughly dealt with on 98 pages, profusely illustrated. The chapter on disturbances of vision without ophthalmoscopic changes and that on the defects of the visual field give a clear and interesting description of rare as well as frequent conditions which, in part, are not yet sufficiently understood. The movements of the eyeballs and their anomalies receive, on 58 pages, due consideration of their scientific and practical importance. The diseases of the lachrymal apparatus and the orbit have hardly had justice done on 37 pages. The circumorbital pneumatic sinuses, and particularly the frontal and sphenoidal, may damage the eye greatly.

The last chapter contains a succinct but good exposition on the operations. Nothing of importance is omitted, so that the student and practitioner may obtain full information on this part of ophthalmology. The specialist will, of course, not be satisfied with a condensed description in keeping with the standard of a text-book, but will train himself by special courses and detailed advice on every one of the numerous and important details of this most delicate domain of the surgical art. H. K.

XVI.—**Manual of the Diseases of the Eye,** with 275 original

illustrations, including 36 colored. By CHAS. H. MAY, M.D., Chief of the Ophthalmic Clinic, Coll. of P. and S., Columbia University, New York. Second edition, revised. William Wood & Co., New York, 1902. Price, $2.50.

This handy manual of 408 small octavo pages has, in its second edition, been considerably increased, especially the ophthalmoscopic part. The colored frontispiece reproduces a clean but very elementary cut of the human eyeball; the eight ophthalmoscopic plates give, in common ophthalmoscopic changes, an idea of what kind of picture can be seen through the eye mirror. The whole book has been revised, and will deserve in a high degree the popularity with which the first edition was received. H. K.

XVII.—**Graefe-Saemisch's Handbuch der gesammten Augenheilkunde.** Second edition.

The new edition of this celebrated cyclopedia of ophthalmic science and art progresses so rapidly, and is, in all numbers that have thus far appeared, so thorough and up-to-date, that it far surpasses the first edition. It is, in fact, a systematically arranged, cohesive collection of elaborate monographs, written by the most competent men. Though short notices appear in the general part of our systematic quarterly reports, we thought it opportune to acquaint our readers with the fast and uninterrupted appearance of this unparalleled storehouse of ophthalmic knowledge, which no author of any pretension can ignore. Thirty-nine numbers have thus far come out. H. K.

Obituary.

Dr. **Richard Förster,** professor of ophthalmology at the University of Breslau, died July 7, 1902, in the seventy-seventh year of his age. He was a man of great medical and general knowledge and one of the most active workers in the classical period of modern ophthalmology. He did not begin as a specialist, but after a thorough regular German university course in all branches of medicine he devoted himself for several years to general practice. The rapid and brilliant development of ophthalmology after the invention of the ophthalmoscope attracted him to the study of eye surgery under Albrecht v. Graefe and others. He settled in Breslau and was received as "Privatdocent" (lecturer) at the university in 1857, where in due time he was appointed professor and honored with the title of privy counsellor. Since 1894 he was a member of the upper house of the Prussian Parliament. Among his numerous pupils we may mention H. Cohn, H. Magnus, A. Groenouw, W. Uhthoff, E. Ficke, H. Wilbrand. His greatest merit consisted in his *investigations of the relations between ophthalmology and general diseases*, published in the first edition of *Graefe-Sämisch's Encyclopædia* in 1877, a fertile field which he opened to scientific and practical cultivation. Among his numerous publications, all of which are valuable, we may point out the following:

"Measurement of the Field of Vision," *Klin. Monatsbl. f. Aug.*, v., 1866, p. 293, *Compte-rendu du Congrès d'Ophtal. de Paris*, 1867, p. 125, and *Annal. d'Oc.*, viii., 1868. "Demonstration of a Perimeter," *ibid.*, 1869, p. 411. "Amaurosis Partialis Fugax," *ibid.*, p. 422. "Light Sense in Disease of the Choroid and Retina," *ibid.*, ix., 1871, p. 337. "Scarlet Fever, Transient Blindness," *ibid.*, x., 1872, p. 346. "The Visual Field in Anæsthesia Retinæ," *ibid.*, xv., p. 162. "The Mapping out of the Visual

Field," *ibid.*, xxi., p. 131, and in *Report on the Fifteenth Meeting of the Heidelberg Ophth. Soc.*, 1883. "On Maturity of Cataract, its Artificial Ripening, Corelysis, Extraction of the Anterior Capsule," *Arch. of Ophth.*, xi., p. 344, 1885. "On Cortical Blindness," *Graefe's Arch. f. Ophthal.*, xxxvii.

Dr. **Edouard Meyer**, of Paris, died in the Sanitarium for Consumptives at Falkenstein, near Frankfort on the Main, at the age of sixty-three. He was born in Dessau, 1838, studied in Halle, Berlin, and Paris. He took up ophthalmology under his friend, A. v. Graefe, and settled in Paris, 1863, where he soon became popular and gained a successful ophthalmic practice. He was a fertile writer, founded and conducted with Dr. H. Dor the *Revue Générale d'Ophtalmologie*, in 1863, and published a very good French text-book of ophthalmology, representing chiefly A. v. Graefe's views. It has been translated into German, English, Spanish, Italian, Russian, and Polish. He was a kind-hearted, refined, and pleasant gentleman, whose memory will be cherished by many of his colleagues on both sides of the Atlantic as well as by the present writer. H. K.

Dr. **Arthur T. Muzzy**, assistant surgeon New York Eye and Ear Infirmary, died March 4, 1902, aged fifty-one.

Dr. **Owen Day Pomeroy** died March 20, 1902, aged sixty-eight. He was ophthalmic and aural surgeon at the Manhattan Eye and Ear Hospital, and the author of a text-book on ear disease and other publications on the eye and ear.

Dr. **Aaron Friedenwald** was born in Baltimore in 1836, received his early education in that city, and graduated in the medical department of the Maryland University in 1860. He then proceeded to Europe and studied in Berlin, Vienna, Prague, and Paris, devoting a large part of his time to diseases of the eye under von Graefe, Arlt, and Desmarres. On his return he entered into general practice, but cultivated ophthalmology as a specialty, and in 1873 he was elected professor of ophthalmology and otology at the College of Physicians and Surgeons at Baltimore, which position he held up to the time of his death. His medical papers were chiefly on subjects of ophthalmology having important bearings on general medicine. His position in the medical profession of Baltimore and Maryland was very high, as is shown by the fact that in 1890 he was elected president of the Medical and

Chirurgical Faculty of Maryland. He was greatly interested in the advancement of medical education, and it was at his suggestion and through his efforts that the medical colleges of Baltimore issued a call for a meeting of the colleges of the United States, which resulted in the formation of the Association of American Medical Colleges.

APPOINTMENTS AND NEWS.

Dr. HARRY FRIEDENWALD succeeded his father in the chair of eye and ear diseases at the College of Physicians and Surgeons at Baltimore, where he had been associate professor in the same chair.

Privatdocent E. HERTEL, M.D., has been appointed extraordinary professor, University of Jena.

Dr. CIRCINCIONE, of Palermo, has been appointed professor ordinarius of ophthalmology at Siena.

Dr. W. C. POSEY, professor of ophthalmology in Philadelphia Polyclinic, has been elected attending surgeon to the Wills Eye Hospital in place of Dr. WILLIAM THOMSON, resigned.

Prof. E. FUCHS, of Vienna, delivered the Bowman lecture of the Ophthalmological Society United Kingdom, and was the guest of honor at a banquet presided over by Dr. LITTLE, chairman of the Society.

Dr. H. V. WÜRDEMANN, of Milwaukee, has been elected professor of ophthalmology in the Chicago Eye, Ear, Nose, and Throat College.

Dr. ARTHUR N. ALLING has been appointed clinical professor of ophthalmology, Yale University.

Dr. A. GROENOUW, of Breslau, has been appointed professor of ophthalmology at Rostock.

Mr. E. TREACHER COLLINS, F.R.C.S., England, has been appointed ophthalmic surgeon to the Charing Cross Hospital, and lecturer on ophthalmology at the medical school of that hospital.

Dr. E. L. OATMAN has been appointed surgeon to the Manhattan Eye and Ear Hospital, New York.

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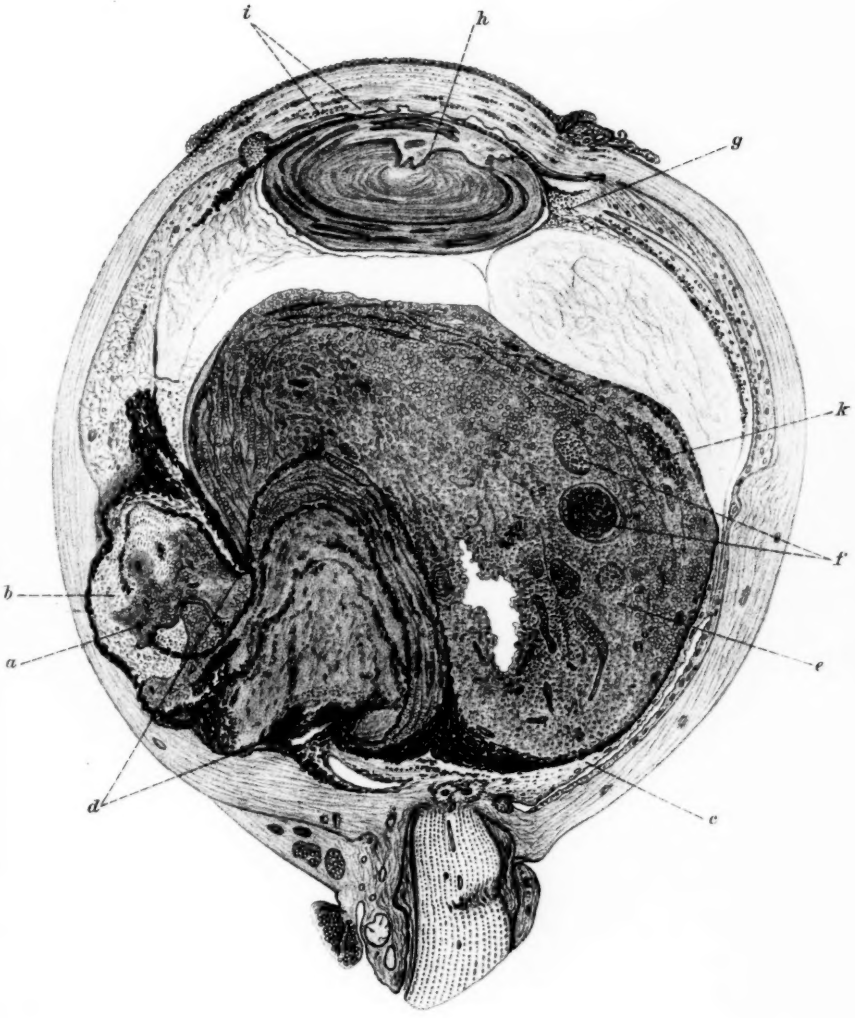

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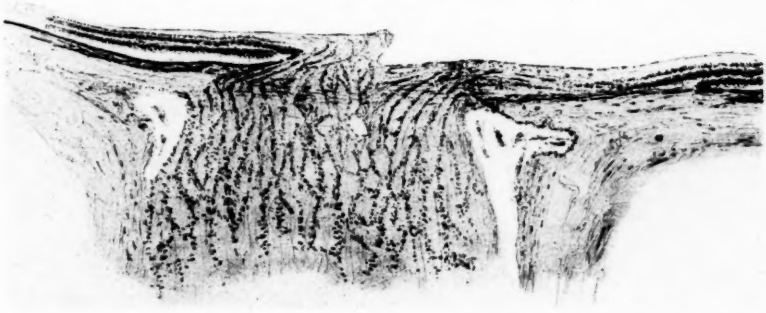

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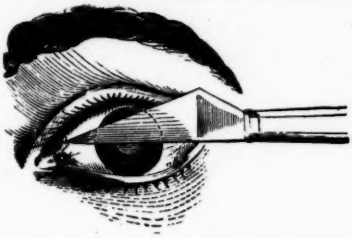

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